Raymond R. Wile
1976-79

U. S. Circuit Court. Southern District of New York.

American Graphophone Co.	)	
	)	
versus	)	In Equity
	)	No. 6542
Cleveland Walcutt and	)	
Edward F. Leeds	)	Patent No. 341,214

UNITED STATES CIRCUIT COURT

SOUTHERN DISTRICT OF NEW YORK.

AMERICAN GRAPHOPHONE COMPANY

--)VS(--

CLEVELAND WALCUTT and
EDWARD F. LEEDS.

In Equity.

(Under patent No. 341,214).

NOTICE OF TAKING TESTIMONY.

NOTICE IS HEREBY GIVEN, that we shall proceed to take proofs for final hearing on the part of Complainant, under and in accordance with the provisions of the Revised Statutes (Sections 863 and 864) in such case made and provided, before Reeve Lewis, A Notary Public in and for the District of Columbia, at our offices, No. 620 F.Street, Washington, D.C. beginning on Wednesday July 14th, 1897, at 10.30 o'clock in the forenoon.

The names and residences of the witnesses whom it is intended to examine are

Charles S.Tainter, of washington, D.C.

Shelton T.Cameron, of washington, D.C. and

James G.Payne, of Washington, D.C. and possibly others.

You are invited to attend and cross-examine the witnesses. The examination will be adjourned from day to day, and to such time and place as may be required without further notice.

[signature]

Solecitors for Complainant.
20 Nassau St. N.Y.

To
H.A.West,Esq.,
Of Counsel for Defendants.

Service of the above notice accepted this 12 day of July 1897.

H.A. West

for Defendants.

UNITED STATES CIRCUIT COURT.

SOUTHERN DISTRICT OF NEW YORK.

AMERICAN GRAPHOPHONE COMPANY

-vs- In Equity.

CLEVELAND WALCUTT and EDWARD F. LEEDS. (Under Patent No. 341,214)

PROOFS FOR FINAL HEARING taken on behalf of Complainant under and in accordance with the provisions of the Revised Statutes (Sections 863 and 864), at the Offices of Messrs. Pollok & Mauro, 620 F.Street, Washington, D.C. before Reeve Lewis, a Notary Public in and for the District of Columbia, beginning at 10.30 A.M.

Washington, D.C.

July 14th, 1897.

10.30 A.M.

Met pursuant to the annexed notice.

Present:

Philip Mauro, Esq. of counsel for Complainant.

No appearance made on behalf of Defendants.

AND THEREUPON

Charles S.Tainter, a witness produced on behalf of Complainant, being duly sworn, deposes and says as follows, in answer to interrogatories propounded by Mr. Mauro:

Q. 1. Please state your name, age, residence and occupation?

A Charles Sumner Tainter; of lawful age; residence Washington, D.C.; occupation, inventor.

Q. 2. Are you the Sumner Tainter, one of the grantees of Letters-patent No. 341,214, in suit?

A. Yes.

Q. 3. Were your inventions and those of Dr C.A.Bell relating to the graphophone and the patents therefor assigned to any one, and if so, to whom?

A. They were all assigned to the Volta Graphophone Company of Alexandria, Virginia.

Q. 4. Are you acquainted with the handwriting and signature of Dr.C.A.Bell, your co-patentee?

A. Yes.

Q. 5. I show you a paper writing which purports to be an assignment of the patent in suit to the Volta Graphophone Company, of Alexandria, Va. Please examine the document and state whether or not the signatures thereto are the genuine signatures of Chichester A.Bell and yourself?

A. The signatures are those of Chichester A.Bell and myself.

Q.6. Was that document to your knowledge duly executed and delivered to the Volta Graphophone Company?

A. yes.

Counsel for Complainant offers in evidence the document identified by the witness, and the same is

AND THEREUPON,

JAMES G. PAYNE, a witness produced on behalf of Complainant, being first duly sworn, deposes and says, in answer to interrogatories propounded by Mr.Mauro, as follows:

Q.1. Please state your name, age, residence and occupation?

A. James G.Payne; of lawful age; residence, Washington D.C.; occupation - lawyer.

Q.2. Were you in 1893, an officer of the ~~xxxxxx~~ Volta Graphophone Company, of Alexandria, Va?

A. I was. I was secretary.

Q.3. ~~xxx xxx xxxxxxx~~ Who was the President of the Company?

A. Alexander Melville Bell.

Q.4. Are you familiar with his handwriting and signature?

A. I am.

Q.5. I show you a paper writing which purports to be an assignment of certain letters patent of the United States from ~~xx~~ the Volta Graphophone Company to the American Graphophone Company. please examine the document~~x~~ and state whether or not ~~the same was duly executed and delivered by the officers whose signatures appear thereon~~ the signatures appearing thereon are the genuine signatures of Alexander Melville Bell, president, and James G.Payne, secretary, of said Company, and whether or not the said assignment was duly executed and delivered by the authority of the Company?

RL

A. The signatures are genuine, that of the president being entirely in the handwriting of Alexander Melville Bell and the attestation being in my own handwriting; the seal there on ~~in~~ is the genuine seal of the Volta Graphophone Company and the assignment was duly executed and delivered pursuant to the authority and direction of the Board of Directors of ~~xxxxxx~~ the said Volta Graphophone Company, as recited in this paper.

Counsel for Complainant offers in evidence the instrument identified by the witness, and the same is marked "Complainant's Exhibit Volta Graphophone Company's Original Assignment."

James G. Payne

Notary Public,
District of Columbia.

Q.3. Have you read and do you understand Letters-patent

AND THEREUPON

SHELTON T.CAMERON, a witness produced on behalf of Complainant, being duly sworn, deposes and says, in answer to interrogatories propounded by Mr.Mauro, as follows:

Q.1. Please state your name, age, residence and occupation?

A. Shelton T.Cameron; thirty-nine; residence, Washington D.C.; occupation, Patent Solocitor, Lawyer, and Mechanical Expert.

Q.2. Please state what experience you have had in the examination of patented and unpatented inventions and in comparing the same for the purpose of determining their substantial identity and dissimilarity, and generally as an expert in patent causes?

A. Having a natural taste for mathematics and mechanics, I spent, as a young man, much time in manufactories and work-shops, studying the construction and operation of mechanical structures, and in later years have continued to visit such establishments in the practice of my profession. I spent more than eight years in the U.S. patent office as an Assistant Examiner, where it was a part of my daily duty to study devices for which patents were sought, to compare the same with patented structures and to report upon their patentability. In the practice of my profession I have prepared and prosecuted many applications for patents, and have repeatedly been called upon to testify as an expert in causes before the Courts, among which I may mention those of Cail Company -vs- U.S.,; French Societe -vs- Bethlehem Iron Company, and Briggs -vs- The Commissioner of patents-

Q.3. Have you read and do you understand Letters-patent No. 341,214; Complainant's Exhibit Bell & Tainter Patent in Suit?

A. I have read and understand the patent referred to.

Q. 4. Have you read the depositions of Jackson W.Alward and Cleveland Walcutt, herein?

A. I have.

Q.5. please explain what is meant by"original"records and what by"duplicate"records, stating how the latter are ordinarily made?

A. The art of recording and reproducing sounds for practical purposes is based entirely upon the patent to Bell & Tainter No. 341,214 in suit. Briefly stated, the method described by that patent consists in causing the sound-waves to impinge upon a vibratory diaphragm carrying a cutting style or graving tool with its point imbedded in a solid tablet having a surface of wax or wax-like composition. As the tablet has motion relative to the diaphragm, cutting style and accompanying parts, (which taken together constitute what is technically known as the "recorder") a groove is cut by the style in the surface of the tablet; and since the cutting style is connected to the diaphragm it necessarily partakes of all the vibrations imparted to the diaphragm by the sound-waves which have been caused to impinge thereon. The result is that the groove cut by the style in the surface of the tablet is of varying depth, the bottom of the groove forming a series of waves or undulations consituting an exact record of the sound-Waves which were caused to impinge upon the diaphragm of the recorder. The action of the cutting style is that of a graving tool, the groove being formed by the removal of the material in chips or shavings. The material of

which the solid surface of the tablet is composed being wax or a wax-like composition, and hence amorphous in character and slightly cohesive, and presenting an equal resistance in all directions, it follows that the walls and bottom of the groove will be smooth and free from cracks or roughness. In practice the groove has sloping walls which are wider apart at the top than at the bottom.

This groove in a tablet having a solid surface of wax or wax-like composition, the bottom of the groove forming a series of waves or undulations corresponding to the original sound waves impinging upon the diaphragm of the recorder, constitutes what is known in the art as a "sound-record".

When the record is formed by causing the sound-waves as they proceed from their usual and natural sources to impinge upon the diaphragm of the recorder, it is known as an "original" record. For example, when the sound-waves caused by the performance of a band of musicians are allowed to impinge upon the diaphragm of the recorder the resulting groove in the waxy or wax-like surface of the tablet constitutes an "original" record of such sound-waves. By simultaneously operating several machines, each having its independent recorder and tablet, it is possible to obtain as many records as there are machines, each of which record would be an "original", it being wholly immaterial, so far as the character of the record as an "original" is concerned whether there were one or many formed at the same time, it only being essential in order to give the record its character as an "original" that it should be formed by causing the sounds waves proceeding from their usual and natural sources to impinge upon the diaphragm of the recorder.

When it is desired to reproduce the sound-waves thus recorded a style having a smoothly rounded end or point and attached to a suitable diaphragm is placed in the initial

The records thus made by use of an "original" as a guide or end of the groove, the end of the reproducing style resting in the bottom thereof. The tablet is then given motion relative to the reproducer exactly as the blank tablet was moved relative to the recording style. The reproducing style is thus forced to follow the series of waves or undulations forming the bottom of the groove, thereby imparting to its attached diaphragm xk vibrations which are the xxx exact reproduction of the vibrations imparted to the diaphragm of the recorder by the original sound waves, xxxx These vibrations of the diaphragm of the reproducer in xxx turn set in motion sound-waves which are the exact reproduction of the original sound-waves.

It is for the purpose of enabling the style of the reproducer to readily "track" in the groove and at all times remain in contact with the undulations constituting the bottom thereof that the groove is formed with sloping walls, as I have heretofore described.

The various combined instrumentalities employed to operate the recorder, the tablet and the reproducer for the purposex of recording and reproducing sounds, constitute what is known as the graphophone and the "original sound record" as defined above is the product of the graphophone.

While a number of original sound recordsmay be made at the same time by setting several graphophones in operation, it has been found desirable in the commercial practice of the art to obtain large numbers of copies of such original records and accordingly means have been devised whereby, by using the "original" record as a guide or pattern, a great number of additional records may be produced which will correspond in every respect to such original, the undulatory groove in the records thus made being practically exact duplications of the groove forming the "original" record.

The records thus made by use of an "original" as a guide or pattern are known in the art as "duplicate" records. additional

While several methods have been proposed for producing "duplicate" records, the one in ordinary use, and so far as I am informed, the only commercially practicable one, consists in placing two graphophones side by side the recorders and reproducers being removed, and an "original" sound-record being placed on one of the graphophones in the position it usually occupies when the machine is to be operated to reproduce the sound-waves, and a blank tablet being placed upon the second graphophone in the same position it would occupy if an "original" sound-record were to be made thereon. A follower having a fine, blunt edge is then placed in the groove constituting the "original" sound-record and this follower is connected to a cutting style having its point imbedded in the surface of the blank tablet. The two tablets are then revolved and at the same time given a translatory motion. The blunt edge of the follower in the original sound-record rubs over the bottom of the undulatory groove, constituting such record, and thus impresses upon the cutting style, whose point is imbedded in the blank tablet, vibrational movements exactly corresponding to the waves or undulations in the groove constituting the "original" sound record, thereby causing the cutting style to duplicate in the blank tablet the undulatory groove of the original. There is thus produced a "duplicate" sound-record which is in every way as perfect a record of the original sound Waves as is the "original" sound record itself, and one which may be, and is, used to reproduce the original sound-waves in conjunction with a reproducer on a graphophone, exactly as is done with the original.

When the "original" sound-record is used as a copy or pattern for the production of "duplicates", it is known as the "master" record, and the "duplicate" record may be used not only to reproduce the original sound-waves, but it too may be

employed as a "master" record for the production of additional "duplicates". In fact the "duplicates" being practically identical with the "originals" in every respect excepting only the manner of their production, may be and are used in all cases and under all conditions where the "originals" can be used. Each constitutes a record of the original sound-waves, and each when cooperating with the same instrumentalities operating in the same way reproduce such original sound waves.

Q. 6 Please examine "Complainant's Exhibits, Defendants' Sound Records Nos. 1 and 2" and state whether or not you find therein the subject-matter of any of the claims of the Bell & Tainter patent, No. 341,214, in suit?

A. I have examined Complainant's Exhibits, Defendants' Sound Records Nos. 1 and 2, referred to. Turning now to the claims of the Bell & Tainter patent, No. 341,214, in suit, I find claim 7 to be as follows:

> "7. A sound record consisting of a tablet or other solid body having its surface cut or engraved with narrow lines of irregular or varied form corresponding to sound-waves, substantially as described".

I find that each of Complainant's Exhibits Defendants' Sound Records consists of a tablet having on its surface narrow lines of irregular or varied form; and by placing the record under a reproducer of a graphophone, I find that these irregularities cause the diaphragm of the reproducer to vibrate so as to produce sound waves, thereby demonstrating that said irregularities correspond to sound waves as required by the terms of this claim. The only remaining requirement of the claim, namely, that the groove or line shall be one formed by a cutting or graving action, is also fulfilled by each of the exhibits. By submitting these exhibits to a high power

glass it may be readily seen that the grooves therein have been formed by a cutting action which removed the material from the surface of the tablets. I am confirmed in this opinion by the fact that Mr.Alward in his deposition referred to in question 4, states that he purchased these records of Walcutt & Leeds, the defendants in this case, and the further statement of the defendant Walcutt, that their records are made by the use of the same cutting point that is furnished with the phonograph.

I find therefore that, without regard to whether Complainant's Exhibit Defendants' Sound Records Nos. 1 and 2 are "original" or "duplicatex" records, that they are sound-records, and that they clearly embody the subject-matter of claim 7 of the Bell & Tainter patent in suit.

Claim 8 of said patent reads as follows:

"8. A sound record consisting of a tablet or solid body having its surface cut or engraved with a number of lines of variable cross-section, the irregularities or variations corresponding in form to sound-waves, substantially as described".

This claim differs from claim 7 only in omitting the requirement that the lines (that is the record groove) shall be "narrow", and in defining the line as of "variable cross-section" instead of being of "irregular or varied form", as in claim 7. The subject-matter of claim 8 is clearly embodied in these exhibits.

Claim 10 reads:

"10. The sound or speech record cut or engraved in wax or a wax-like composition, substantially as described".

I have stated in connection with claim 7 that each of these exhibits is a sound record, and that it is formed by cutting or engraving the record groove in the surface of the

tablet, but neither claim 7 nor claim 8 specifies the character of the material composing the tablet. Claim 10 however, demands a sound record cut or engraved in wax or a wix-like composition.

On page 1, lines 59 to 65 of the specification of the Bell & Tainter patent, it is stated that :

"The invention consists, secondly, in engraving or cutting the record in a waxy or amorphous and slightly cohesive substance. Preferably, a compound of beeswax and paraffine (the latter in excess) is employed. This compound has no tendency to clog the style but is readily removed thereby in chips or shavings."

It is thus clearly pointed out that by waxy or wax-like composition is meant a substance which is amorphous, that is, non-crystalline and non-fibrous, and which is slightly cohesive and readily removable from the groove in chips or shavings without any tendency to clog the style.

The substance of which the tablets Complainant's Exhibits Defendants' Sound Records Nos. 1 and 2 are composed is clearly a waxy or wax-like composition in that it is amorphous, slightly cohesive and presenting an equal resistance to the cutting style in all directions thus rendering it easy to smoothly remove the material from the groove in chips or shavings without clogging the style. I am therefore quite clear that the subject-matter of claim 10 is found in each of the exhibits.

Claims 17 and 18 of patent No. 341,214 (being the patent in suit) are as follows:

"17. The sound record in the form of an irregular groove with sloping walls cut in solid material, substantially as described".

"18. The sound-record cut in wax or wax-like composition in the form of an irregular groove with sloping walls, substantially as described."

I have heretofore state that I find in each of these exhibits a sound-record in the form of an irregular groove cut in solid material. Claim 17 imposes the further condition that the groove shall have sloping walls and by inspecting, under a high power glass, the grooves constituting the sound-records of the exhibits it is clearly seen that the walls of the grooves are sloping. I therefore find that each of said exhibits embodies the subject-matter of claim 17.

Claim 18 differs from claim 17 in requiring that the record shall be "cut in wax or wax-like composition", and as I have heretofore pointed out that these exhibits are sound-records, that they are in the form of irregular grooves with sloping walls, that they are cut, and that the material composing the tablets is a wax-like composition, I find embodied in these exhibits the subject-matter of claim 18.

I may add that these records complainant's Exhibits Defendants' Sound Records Nos. 1 and 2, in their form, ~~principal~~ physical properties, general characteristics, and operation when placed upon a graphophone, cannot be distinguished from the ordinary graphophone records of commerce.

Sheldon G. Cameron

Notary Public,
District of Columbia.

Counsel for Complainant gives notice that Complainant's prima facie proofs are closed.

UNITED STATES CIRCUIT COURT,

SOUTHERN DISTRICT OF NEW YORK.

AMERICAN GRAPHOPHONE COMPANY

-vs-

CLEVELAND WALCUTT and
EDWARD F. LEEDS.

In Equity.

(Under patent No. 341,214).

CERTIFICATE OF MAGISTRATE.

District of Columbia, s.s:

I, REEVE LEWIS, a Notary Public in and for the said District of Columbia, duly commissioned and qualified, and authorized to administer oaths, and to take and certify depositions, do hereby certify that, pursuant to the annexed notice, issued and served in this cause, personally appeared before me, on the 14th day of July 1897, at the offices of Messrs. Pollok & Mauro, #620 F.Street, N.W., Washington, D.C.

Charles Sumner Tainter,

James G.Payne, and

Shelton T.Cameron,

witnesses on behalf of complainant, and Philip Mauro, Esq., appeared as on behalf of Complainant, and no appearance was made on behalf of defendants;

That the aforementioned witnesses, Charles Sumner Tainter, James G.Payne and Shelton T.Cameron, who were of sound mind and lawful age, and were by me first carefully examined and cautioned and duly sworn to testify the truth, the whole truth, and nothing but the truth; and they thereupon testified as is above shown, and that the depositions by them subscribed

as above set forth, were reduced to writing in the presence of the witnesses themselves, and from the statements of them, and were subscribed by the said witnesses in my presence, and were taken at the place in the annexed notice specified and at the times as set forth.

I further certify that the reason for taking said depositions was, and is, and the fact was, and is, that all of the deponents live at Washington, D.C. more than one hundred miles from the place where said cause is appointed by law to be tried; that I am neither of counsel nor attorney to either of the parties to said suit, nor interested in the event of said cause, and that it being impracticable for me to deliver said depositions and the exhibits thereto attached with my own hand into the court for which they were taken, I have retained the same for the purpose of being sealed up and directed with my own hand, and speedily and safely transmitted to the said court for which it was taken, and to remain under my seal until there opened.

And I further certify that my fees for taking, certifying, and returning said depositions, amounting to $10.80 have been paid to me by the complainant, and that the same are just and reasonable.

In Testimony whereof I have hereunto set my hand and seal this 15th day of July, 1897.

Notary [illegible]
District of Columbia.

EXHIBIT A.

At a Stated Term of the United States Circuit Court for the Southern District of New York, held at the Court House, in the City of New York, on the 19th day of January, 1898.

Present:

HON. HOYT H. WHEELER,

District Judge.

American Graphophone Company, Complainant, -versus- Cleveland Walcutt and Edward F. Leeds, Defendants.	In Equity. No. 6,542.

This cause came on to be heard on the 14th day of December, 1897, on pleadings and proofs, and was argued by counsel both for the complainant and for the defendants; and the pleadings and proofs, as well as the briefs of counsel, having been fully considered, and the Court being fully advised in the premises, it is hereby ordered, adjudged and decreed as follows:

That the complainant, the American Graphophone Company, a corporation organized under the laws of West Virginia is sole and exclusive owner of letters patent No. 341,214, bearing date of the 4th day of May, 1886, and being for new and useful improvements in recording and reproducing speech and other sounds, and apparatus therefor, as set forth in the bill of complaint; and that the said letters patent are valid so far as claims 7, 8, 10, 17 and 18 are concerned.

IT IS FURTHER ORDERED, ADJUDGED AND DECREED that the defendants, Cleveland Walcutt and Edward F. Leeds, have infringed the said letters patent and particularly the above specified claims thereof by the manufacture, use, and sale of

"duplicate" sound-records, being engraved sound-records copied from an original or "master" record, substantially as represented by "Complainant's Exhibit Defendants' Sound Records Nos. 1 and 2"; and that complainant is therefore entitled to recover damages and profits for all infringements by said defendants in the particulars pointed out.

IT IS FURTHER ORDERED, ADJUDGED AND DECREED that the defendants, the said Cleveland Walcutt and the said Edward F. Leeds, their attorneys, trustees, agents, clerks, employees, servants and workmen, and each and every of them be, and they are hereby enjoined for the remainder of the term of said letters patent from further infringing the same, and from making or causing to be made, using or causing to be used, selling or causing to be sold, the sound-records set forth by claims 7, 8, 10, 17 and 18 of the said letters patent, and particularly from the manufacture, use, and sale of the said "duplicate" sound-records made on machines not procured from the plaintiff or under his patent and that the complainant recover from the said defendants as well the damages sustained in and by reason of the said infringements, as the profits, amounts, and savings made and realized by the defendants thereby, together with the costs herein to be taxed, and that the cause be referred to Arthur H. Masten, a standing master of this court to take, state, and report the account of damages and profits under and in accordance with this decree.

HOYT H. WHEELER.

(Endorsed) U. S. Circuit Court, Southern District of New York.-- American Graphophone Company versus Cleveland Walcutt and Edward F. Leeds, No. 6542-- DECREE FOR INJUNCTION AND ACCOUNT.-- Lee & Lee, Solicitors for complainant, 20 Nassau Street, New York.-- U. S. Circuit Court, Filed Jan. 12, 1898, John A. Shields, Clerk.

(Seal) A Copy
John A. Shields
Clerk.

UNITED STATES CIRCUIT COURT,
Southern District of New York.
In Equity.

AMERICAN GRAPHOPHONE COMPANY,

-vs.-

CLEVELAND WALCUTT and EDWARD F. LEEDS.

ORDER TO SHOW CAUSE AND AFFIDAVITS THEREON.

At a Stated Term of the United States Circuit Court for the Southern District of New York, held at the United States Court Rooms in the City of New York on the 5th day of February 1898,

Present,

HON. E. HENRY LACOMBE,

Circuit Judge.

AMERICAN GRAPHOPHONE COMPANY

vs.

CLEVELAND WALCUTT and EDWARD F. LEEDS.

In Equity.

ON READING the affidavits of Shelton T. Cameron, verified February 5, 1898; Edward D. Easton, verified January 31, 1898; R. F. Cromelin, verified February 5, 1898; Edward N. Burns, verified February 4, 1898; Victor H. Emerson, verified February 4, 1898; Charles A. L. Massie, verified February 4, 1898; Philip Mauro, verified February 4, 1898; and Merwin E. Lyle, verified February 3, 1898; and after due consideration thereof; it is, on motion of counsel for complainant,

ORDERED, that the defendants Walcutt and Leeds, and each of them, show cause, if any they have, before this Court, at the United States Court Rooms, Post Office Building, New York City, on Friday, the 11th day of February 1898, at the opening of the Court on that day, or as soon thereafter as counsel can be heard,

1. Why attachment should not issue against them, and each of them, for contempt of the process of this Court by the violation of the injunction issued January 25, 1898 herein; and

2. Why they should not be compelled, by the order of this Court, to deliver up to the judicial custody, to abide the

result of the cause, all apparatus in their possession or under their control for making duplicate sound records for talking machines in violation of claims 7, 8, 10, 17 and 18 of Letters Patent No. 341,214 involved herein, or like or similar to Complainant's Exhibit Defendants' Duplicate Sound Record referred to in the affidavit of Edward N. Burns, or, in the alternative, why they should not be enjoined and restrained from selling or otherwise parting with said apparatus or removing the same from the present place of business of said defendants within this jurisdiction.

IT IS FURTHER ORDERED that until the hearing and determination of this order to show cause, the said defendants Walcutt and Leeds, and each of them, and their associates, attorneys, servants, clerks, agents and workmen, be and they hereby are enjoined and restrained from selling or otherwise parting with the apparatus now in their possession or under their control for making duplicate sound records in infringement of claims 7, 8, 10, 17 and 18 of Letters Patent No. 341,214 involved herein, or like or similar to Complainant's Exhibit Defendants' Duplicate Sound Record referred to in the affidavit of Edward N. Burns, and from altering, adding to or subtracting from said apparatus, and from removing the same, either in whole or in part, from its present location at the place of business of said defendants within this jurisdiction.

IT IS FURTHER ORDERED that a copy of this order and of the affidavits upon which the same is made be served upon the solicitor for defendants on or before February 7, 1898.

E Henry Lacombe

U. S. Circuit Judge.

U. S. CIRCUIT COURT, Southern District of New York.

American Graphophone Company, Complainant,	
-vs-	In Equity.
Cleveland Walcutt and Edward F. Leeds, Defendants.	

State of
County of NEW YORK, ss:

E. D. EASTON, being duly sworn, deposes and says;

I am the President of the American Graphophone Company, complaintant herein. I have given my attention, exclusively, to the talking machine business since the beginning thereof, and am familiar both with the past history and present conditions of that business in all its details.

The present defendant Walcutt and the firm of Walcutt and Leeds, his successors in business, have for about five years past carried on in this city, the manufacture of sound-records, using the ordinary Graphophones or phonographs and blank tablets, in the well known manner. Some of the phonographs in use by them were purchased by Walcutt from the receiver of the North American Phonograph Company, and it is likely that some or probably all, were made under license from complaintant. Some phonographs and supplies were made and sold by said receiver without authority from complaintant, and in consequence thereof complaintant brought suit against him in the Circuit Court for the District of New Jersey,

resulting in a final decree for complainant , entered August 24, 1896, for an injunction and for damages and costs which were recovered by complainant.

Several years ago, in order to reduce the cost of sound-records to users thereof, complainant began the manufacturer of "duplicate" sound-records under the patent in suit and other patents owned by complainant. This manufacture is a different and distinct operation from the production of "original" sound-records, the latter being merely the normal product of the Graphophone. Duplicate sound-records are made on duplicating machines, specially constructed for that work, and their function is to produce on a blank tablet, an engraved copy of the sound-writing on an original or "master" record, the copying being effected by transferring devices. Complaintant has a large number of these machines in operation at its factory. It has never sold any duplicating machines to others, or licensed or authorized any person or concern to make and sell such machines. Duplicate sound-records cannot be made except on duplicating machines, and particularly cannot be made by graphophones or phonographs. Although theoretically two graphophones could be so placed that one (provided with a sound-record and a reproducer) could talk into another (provided with a blank tablet and recorder), it would not be possible to make commercial duplicates in that way.

During all this time when complaintant was introducing duplicate sound-records commercially, defendants did not enter upon

that business, but used their graphophones and phonographs for making original sound-records until the latter part of the year 1896, about a month before the bill of complaint herein was filed. As late as May 1897, the catalogues printed by Walcutt & Leeds, one of which was produced by the witness Alward in suit no. 6542 against these defendants, and obtained by him at their place of business on May 14, 1897, contained this statement:

> "We do not make a few original records to improve the average, and sell the majority of duplicates. We make and sell original records only. This is guaranteed".

On January 13th, 1898, two days after Judge Wheeler's opinion in this suit was filed, Cleveland Walcutt, one of the defendants, called at the office of the complaintant company and asked me if I would consider a proposition allowing him to proceed with duplicating under a royalty. I asked him if he and Mr. Towksbury were not together in the "Consolidated Phonograph Companies", a concern recently incorporated in New Jersey, and he replied that he was. This company has been organized with the apparent design of concealing the real parties controlling it. The names of the incorporators are unknown to all the persons of whom I have made (or caused to be made) inquiries regarding them. Circulars issued by the company contain no address, but from many sources I learn that these circulars are distributed by Mr. Towksbury, of the U. S. Phonograph

Company, of Newark, against whom suits similar to those against Walcutt & Leeds are pending. I have in my possession a catalogue which bears on the first page of the cover the following title. "Records for the Phonograph and the Graphophone. Made for the Consolidated Phonograph Companies. Sold by Walcutt & Leed, Ltd., 53 East Eleventh St., New York."

The catalogue contains a long list of records offered at fifty cents each retail, which shows that they are duplicate records, as original records could not be made and sold with profit at that price.

There are known at the present time, duplicating machines of two types. The first of these is that described by the Tainter patent No 341287, ~~in suit~~, and consists essentially of supports for the master record and blank tablet respectively, means for rotating these supports synchronously, a follower for following the sound groove of the master-record and receiving vibrations therefrom, and a cutting point mechanically connected with said follower, for cutting a copy of the original record in the blank tablet. This type of machine has been improved by Bettini (see patent no. 488,381, dated Dec. 20, 1892) and Macdonald (patent no. 559,806, dated May 12, 1896). The Bettini and Macdonald patents are owned by the complaintant company. This type of machine is that which is used by complaintant, and by all others who are making duplicate records at the present time, so far as my information extends.

The second type, which is the same in principle as the first, differs therefrom in that the follower and the cutting point actuated thereby are each carried by a diaphragm and the two diaphragms are connected by a closed passage in which a body of air or other fluid is confined. This type of machine is covered by patent no. 475,490 granted to me as the assignee of L. F. Douglass, May 24, 1892, and by me assigned to the complaintant company. The duplicate records produced by this machine are not of so good a quality as those produced by duplicating machines of the type just described.

No other duplicating methods or machines have ever been commercially used to my knowledge, and my knowledge of the industry is such that I am sure I would have learned thereof if any other method or machine existed.

E. D. Eadie

Sworn to before me, this 31st day of January, 1898.

Elisha [illegible] amp,
Notary Public
N.Y.C.

UNITED STATES CIRCUIT COURT

Southern District of New York.

American Graphophone Company

vs. In Equity.

Cleveland Walcutt and
Edward F. Leeds.

AFFIDAVIT OF

SHELTON T. CAMERON.

State of New York,
City of New York. S.S.

SHELTON T. CAMERON, being duly sworn, says: I reside in Washington, D.C., and am a solicitor of Patents and expert in patent causes. I am familiar with the construction and operation of talking machines commonly called graphophones or phonographs, and have repeatedly examined and operated such machines.

I am familiar with United States Patent No. 341,214, granted to Chichester A. Bell and Sumner Tainter, and the construction and operation of the devices described and claimed therein. I am also familiar with the construction and operation of apparatus for duplicating graphophone records, especially apparatus of the character defined in U.S.Patent to Sumner Tainter, No.341,287 as the same has been improved by Gianni Bettini in the manner shown in his U.S.patent No.488,381, and perfected by Thomas H. Macdonald in the form defined by U.S.Patent No.559,806.

I have recently given an expert deposition in this cause. I have carefully read the several depositions given by Cleveland Walcutt, one of the defendants in this cause, and also his depositions given in the case of American Graphophone Company vs. Cleveland Walcutt, which was a suit for the infringement of the same Bell

and Tainter patent No. 341,214 and the Tainter patent No. 341,288.

As I have pointed out in my expert deposition above referred to, the sound-record defined in claims 7, 8, 10, 17 and 18 of the Bell and Tainter patent No. 341,214, consists of a tablet or solid body of wax or wax-like composition having narrow lines of irregular form corresponding to sound waves cut or engraved upon its surface, the lines or grooves constituting the record having sloping side walls.

These records may be the product of the graphophone or they may be the result of the operation of other apparatus different from the graphophone.

The records made by a graphophone are known in the art as "original" records, being formed by causing the sound waves as they proceed from their usual and natural sources to impinge upon the diaphragm of the recorder on the graphophone. All other records are known as "duplicate" records and in the formation of such "duplicates" it is absolutely essential that an "original" be employed as a pattern or "master" acting in connection with the duplicating apparatus.

Several forms of duplicating apparatus have been proposed, but I know of only one form that is in practical commercial operation to-day. In this apparatus means are provided for simultaneously revolving the "original" record which is to act as the pattern or "master" and a blank tablet upon which it is desired to cut the "duplicate" record. A rubbing point similar to or the same as the reproducing style of a graphophone is caused to track in the groove constituting the "original" or "master" record, while a cutting style similar to or the same as the recording style of a graphophone has its point imbedded in the surface of the blank tablet. The rubbing style which acts on the master record is connected by a suitable mechanical appliance, as a lever, with the graving or cutting style which acts on the blank tablet. The two styles and their connecting lever are provided with a carriage which

is given a translatory movement lengthwise of the tablets, by means of a feed screw arranged parallel with the tablets. Means are also provided for automatically maintaining the styles in proper operative relation to the master record and the blank tablet respectively.

When the "master" record and the blank tablets are simultaneously revolved the variations in the groove of the "master" record imparts, through the rubbing style and the connecting lever, motion to the cutting or graving style imbedded in the blank tablet thereby causing it to cut a record in the blank exactly corresponding to the "master" or "original" record. This form of apparatus is based upon the U.S.patent to Sumner Tainter No.341,287 as improved in the manner shown in Bettini's U.S.Patent No.488,381, and perfected by Thomas H. Macdonald and described in his U.S.Patent No. 559,806.

From the foregoing it will be manifest that a "duplicate" record thus produced is not the product of a graphophone but is a distinct article, the product of an apparatus whose modus operandi is quite different from that of the graphophone.

The "original" is the product of the graphophone, the "duplicate" is a mechanical copy of the "original", but is produced by a different apparatus.

It is also evident from the description of duplicating machines given above that they are highly specialized machines, designed and constructed for the sole purpose of making engraved duplicates of original records, and that they are not susceptible or capable of being used for any other purpose.

I am familiar with the testimony given by the defendant Walcutt herein, and believe that I understand the type of apparatus used by the defendants in the manufacture of infringing sound records. In my belief, that apparatus consists, briefly, of two revoluble mandrels, one carrying a blank and the other a master record. Located between these are, first, a rubbing style [illegible]

with the groove in the record tablet, and second, an engraving style coacting with the blank, and a mechanical appliance connecting the graving style with the rubbing style. The undulations in the groove of the record impart motion to the rubbing style, which in turn imparts movement to the engraving style, thereby duplicating in the blank the groove formed by the record.

I have examined the sound record marked "Complainant Exhibit Defendant's Duplicate Sound-record" and referred to in the affidavits of E. N. Burns and V.H.Emerson herein, which I have read. This exhibit is the ordinary commercial sound-record defined in claims 7, 8, 10, and 17 of the Bell and Tainter patent in suit being in every structural and physical characteristic identical with the complainant's exhibit Defendant's Sound-record with reference to which I testified in my deposition already referred to.

Duplicating machines such as I have herein described and such as Walcutt described as the means whereby he manufactured duplicates cannot be used for any purpose except to produce duplicate sound-records having the characteristics of this exhibit.

Stilson J. Cameron

Sworn to and subscribed before me this 5th day of February, 1898.

Eugene Conrad

Affidavit of Service.—24. John Polhemus Printing Co., Printers and Mf'g Stationers, 121 Fulton St., N. Y.

United States Circuit Court
Southern District of New York

American Graphophone Co.

vs.

Eberland Walcutt et al.

Affidavit of Service.

State of New York,
County of New York } ss:

George P. Dyer of the Borough of Manhattan, City of New York, being duly sworn, says that he is above the age of twenty one and that on the seventh day of February in the year one thousand eight hundred and ninety eight he served the annexed order to show cause and affidavits in support thereof on N. Albertus West, Solicitor for defendants in this action, at

by delivering a copy of the same to, and leaving the same with said West

Sworn to before me, this 7th *day of* February 1898

J. F. Edmonds
Notary Public
Kings & Nas. Co.

George P. Dyer

IN THE CIRCUIT COURT OF THE UNITED STATES

for the

SOUTHERN DISTRICT OF NEW YORK...

American Graphophone Company, Complainant,		
versus		In Equity.
Cleveland Walcutt and Edward F.Leeds,		

State of New York; County of New York; S.S.

Phillip Mauro, being duly sworn says:

I reside in Washington, D.C., and am of counsel for the complainant herein. I have participated in and am familiar with all the litigation on the graphophone patents.

On or about February 6th.1897, two suits were begun against Walcutt & Leeds, the defendants herein, one under patent No.341,214 of May 4, 1886, ~~the other~~ (the present suit) the other under patent No.341,287 of the same date. The infringement charged in the first suit was the manufacture, use and sale of duplicate sound records, that is to say, of engraved copies of original sound records, the originals being made on the graphophone (or phonograph). The infringement charged in the second suit was the use, for the purpose of making duplicates, of duplicating machines substantially as described in the patent in suit. Defendants tried to maintain secresy as to the construction of their duplicating machines, and having ~~injured~~ ignored interrogatories annexed to the bill of complaint, exceptions for insufficiency were filed to their answer, and were argued in June 1897. They were allowed by the Court in January 1898.

Meanwhile defendant Walcutt was subpoened and examined by complainant, in the suit on patent No.341,214, and also testified

in that case on his own behalf. Regarding his duplicating machines he claimed (1) that they were ordinary phonographs purchased by him from the receiver of the North American Phonograph Company; (2) that the only thing in addition to these phonographs that he used in making duplicates was a "simple mechanical device" contrived by himself; (3) that his method of making duplicates was a secret invention of his own.

This case went to final hearing before Judge Wheeler, who sustained the patent and held that defendants had infringed it.

On Saturday, January 22nd.1898, an argument was had before Judge Wheeler touching the settlement of the decree, at which Mr. C.A.L.Massie, Mr.H.T.Kingsbury and myself were present on behalf of the complainant. Mr.West, Mr.Walcutt in person and a Mr.Tewksbury, who is a defendant in suits pending in New ~~York~~ Jersey, were also present. Mr.West contended that his clients had the right to use any graphophone or phonographs in his possession and which were licensed under the patent in suit, for making duplicates, and he stated to Judge Wheeler that his clients made duplicates by placing two phonographs close together and permitting one phonograph to talk into the other, so that the listening phonograph received a copy of the record on the talking phonograph. My contention was that duplicates could not be made in this way, that defendants did not so make them, but used regular duplicating machines, and that none of their sound-records were products of licensed phonographs or graphophones. Defendant Walcutt's testimony, ~~quoted in Mr. Tewksbury's affidavit~~, shows that he does not make duplicates in this way. In order not to have the decree so drawn as to interfe with the legitimate use by defendants of licensed machines lawfull in their possession, Judge Wheeler interlined in the decree (as drawn by me) these words,— "made on machines not procured from the plaintiff or under this patent"—the whole passage then readi "that the defendants be enjoined particularly from the manufactur

use and sale of the said 'duplicate' sound-records made on machines not procured from the plaintiff or under this patent"; and Judge Wheeler remarked that it would appear by the accounting how many (if any) duplicates had been made by defendants on machines bought from complainant or licensed under the patent, in suit. I agreed to this interlineation knowing that complainant had never sold any duplicating machines or licensed their use by any one. A copy of the decree is hereto annexed marked Exhibit A.

Immediately after the settlement of the decree Mr.West called to see me at the office of Messrs.Lee & Lee, 20 Nassau Street, and a conversation ensued in the presence of Mr.Massie. Mr.West stated that it was the wish of his client to make an agreement with the American Graphophone Company. I told Mr.West that this was a business matter to be settled between the parties concerned, but that I did not think my client would consider at present any proposition to grant Walcutt & Leeds a license to manufacture duplicates. Thereupon Mr.West stated that his clients intended any how to continue making duplicates and that the decree as drawn by Judge Wheeler permitted it. I asked Mr.West if he meant to say that his clients would continue, as they had been doing, to use their mechanical duplicating machines. He replied that such was his meaning and that he had advised them they had the right to do so. I asked him if that was the case why he asked a license from the American Graphophone Company, to which he made no reply.

Philip Mauro

Sworn to and subscribed before me this 4th day of February 1898.

Elisha [illegible]

Notary Public

M.J.C.

Exhibit A

At a Stated Term of the United States Circuit Court for the Southern District of New York, held at the Court House, in the City of New York, on the 19th day of January, 1898.

Present,

HON. HOYT H. WHEELER,

District Judge.

American Graphophone Company, Complainant,

-versus-

Cleveland Walcutt and Edward F. Leeds, Defendants.

In Equity

No. 6,542.

This cause came on to be heard on the 14th day of December, 1897, on pleadings and proofs, and was argued by counsel both for the complainant and for the defendants; and the pleadings and proofs, as well as the briefs of counsel, having been fully considered, and the Court being fully advised in the premises, it is hereby ordered, adjudged and decreed as follows:

That the complainant, the American Graphophone Company, a corporation organized under the laws of West Virginia is sole and exclusive owner of letters patent No. 341,214, bearing date of the 4th day of May, 1886, and being for new and useful improvements in recording and reproducing speech and other sounds, and apparatus therefor, as set forth in the bill of complaint; and that the said letters patent are valid so far as claims 7, 8, 10, 17 and 18 are concerned.

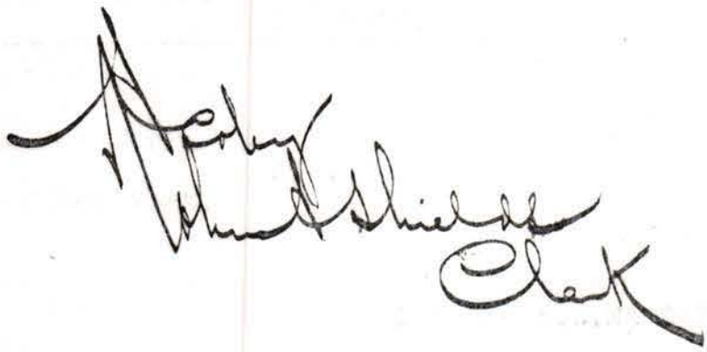
IT IS FURTHER ORDERED, ADJUDGED and DECREED that the

defendants, Cleveland Walcutt and Edward F. Leeds, have infringed the said letters patent and particularly the above specified claims thereof by the manufacture, use, and sale of "duplicate" sound-records, being engraved sound-records copied from an original or "master" record, substantially as represented by "Complainant's Exhibit Defendants' Sound Records Nos. 1 and 2"; and that complainant is therefore entitled to recover damages and profits for all infringements by said defendants in the particulars pointed out.

IT IS FURTHER ORDERED, ADJUDGED and DECREED that the defendants, the said Cleveland Walcutt and the said Edward F. Leeds, their attorneys, trustees, agents, clerks, employees, servants and workmen, and each and every of them be, and they are hereby enjoined for the remainder of the term of said letters patent from further infringing the same, and from making or causing to be made, using or causing to be used selling or causing to be sold, the sound-records set forth by claims 7, 8, 10, 17 and 18 of the said letters patent, and particularly from the manufacture, use, and sale of the said "duplicate" sound-records made on machines not procured from the plaintiff or under his patent and that the complainant recover from the said defendants as well the damages sustained in andby reason of the said infringements, as the profi ts, amounts, and savings made and realized by the defendants thereby, together with the costs herein to be taxed, and that the cause be referred to Arthur H. Masten, a standing master of this court to take, state, and report the account of damages and profits under and in accordance with this decree.

HOYT H. WHEELER.

(Endorsed) U.S. Circuit Court, Southern District of New York.-- American Graphophone Company versus Cleveland Walcutt and Edward F. Leeds, No. 6542-- DECREE FOR INJUNCTION AND ACCOUNT.-- Lee & Lee, Solicitors for complainant, 20 Nassau Street, New York.-- U. S. Circuit Court, Filed Jan. 19, 1898, John A. Shields, Clerk.



IN THE CIRCUIT COURT OF THE UNITED STATES FOR THE SOUTHERN DISTRICT OF NEW YORK.

American Graphophone Company, Complainant.	)	
versus	)	-- In Equity.
Cleveland Walcutt and Edward F.Leeds, Defendants.	)	

State of New York.
S.S.
County of New York.

CHARLES A.L.MASSIE

being duly sworn, says:

I am a resident of the City of New York and an attorney at law with the firm of Pollok & Mauro.

I was present at the argument before Judge Wheeler on Saturday, January 22nd.1898, in reference to the settlement of the decree in American Graphophone Company vs.Walcutt & Leeds, No. 6,542, on patent No.341,214, and attended carefully to the discussion. The same morning, immediately on returning to my office, I made a memorandum of what occurred before Judge Wheeler, which memorandum was signed by Mr.Mauro and myself and is as follows:

"Saturday, January 22nd. 1898.

Memorandum of occurrences at the hearing to re-settle interlocutory decree in the case of American Graphophone Company versus Cleveland Walcutt and Edward F.Leeds #6542, before Judge Wheeler in chambers, Saturday, January 22, 1898.

Subject: "Duplicate Sound Records".

Mr.WEST suggested that the ownership of licensed graphophones or phonographs carried with it the right t. use those machines by coupl[illegible] toget[illegible]

record and a reproducer, and the other a blank-tablet and a cutting stylus--and transferring the record to the blank tablet by means of the sound waves; or (as he phrased it) "having one instrument talk into the other."

Mr.MAURO directed the Court's attention to the record, where it appeared that in answer to a direct question put to Mr. Walcutt by Mr.Mauro, the witness stated that he did not use the method just described for making duplicates; and that being asked to describe how he made his duplicates, he refused to answer--saying his method was a trade secret.

Mr.MAURO then asked Mr.West if he would admit (or state upon his own authority) that the methods now described by the latter was in fact, the method employed by Walcutt & Leeds.

Mr.WEST would not do so.

Mr.MAURO directed the Court's attention to the record in which complainant's expert testified that this method could not be successfully employed and that defendant stated expressly that he did not use this method.

JUDGE WHEELER said he understood that a sound-record such as described in the patent in suit, however produced, was an infringement, unless licensed; and that he did not wish to cut the defendants off from any right they might have to use their licensed instruments in a legitimate manner.

The decree was accordingly amended with this in view.

(Signed) { Philip Mauro.
C.A.L.Massie.

January 22, 1898."

I have read the affidavit of Philip Mauro herein verified. I heard the conversation between Mr.Mauro and Mr.West in the office of Messrs.Lee and Lee. The said affidavit of Mr.Mauro correctly states the substance of that conversation. Mr.West said, in answer to a direct and pointed question by Mr.Mauro, that he did not

Walcutt & Leeds, intended to continue the manufacture of duplicate-sound-records by their mechanical duplicating machines just as they had been doing before the decree.

Since that date I have been occupied in obtaining information regarding the manufacture and sale by defendants of duplicate sound-records. I have heard from several sources that Walcutt and Leeds were continuing such manufacture and sale and were stating to customers that the decree of the Court permitted them so to do. I also heard, as coming from them, that they had sold out their business to a New Jersey concern, and were carrying it on for and under instructions from that concern. I was also told that they had installed nine new duplicating machines, and expected to engage in that business more extensively than ever. These statements usually proceeded from customers of defendants who did not wish to give affidavits or permit their names to be used. The substance of the foregoing statements has been the common talk in Graphophone circles.

Charles A. Maxie.

Subscribed and sworn to before me this 4th day of February, 1898.

Elisha [illegible]
Notary Public
N.Y.C.

CIRCUIT COURT OF THE UNITED STATES FOR THE SOUTHERN DISTRICT OF NEW YORK.

American Graphophone Company, Complainant, versus Cleveland Walcutt and Edward F.Leeds, Defendants.	-- In Equity.

State of New York
S.S.
County of New York.

EDWARD N.BURNS

being duly sworn, says:

I reside in New York City, and am in charge of the Department of "Traveling Salesmen and Insurance" of the Columbia Phonograph Company.

On Wednesday, February 2nd.1898, shortly after noon, I called at the establishment of Walcutt & Leeds, No.53, East Eleventh Street, New York City, and was met by a man with black moustache and eye-glasses that I understood to be Mr.Edward F.Leeds, one of the firm. I asked if they kept graphophone records. He said they did. I asked if they were the same as those sold at 27th and Broadway. He replied: "No, ours are better."

After further conversation he handed me a printed catalogue list of sound-records, and I picked out several and asked him if they were "duplicates," ~~told him I wanted "originals"~~. He answered that they kept in stock and sold "duplicates" of all the numbers listed, but that the "originals" were not on sale,--that no concern in the business--unless it were some insignificant dealer doing business in a very small way--had any originals for sale, and that all sound-records I could find for sale were "duplicates."

I then bought six which he told me were "duplicates" and took them directly to Mr.Victor H.Emerson, the head of the record-making department of the American Graphophone Company, who on examination pronounced them all to be duplicates made on "mechanical" duplicating machines. He pointed out the indications by which such duplicates records could be readily distinguished. For identification I scratched on the edge of each of these records the words: "Bought of Walcutt & Leeds, Feb'y 2, 1898. E.N.Burns" and made five nicks in the end. Mr.Emerson also cut on the other end the word "Duplicate, V.H.E." The record marked "Complainants Exhibit Defendants' Duplicate Sound-Record" is one of those bought by me from Walcutt & Leeds as aforesaid.

Edward N Burns,

Sworn to and subscribed before me this 4th day of February, 1898.

Notary Public
N.Y.C.

IN THE CIRCUIT COURT OF THE UNITED STATES

for the

SOUTHERN DISTRICT OF NEW YORK.

American Graphophone Company,
Complainant,

versus

Cleveland Walcutt,
and
Edward F. Leeds.

In Equity.

State of New York,)
) ss.
County of New York.)

VICTOR H. EMERSON, being duly sworn, says: I reside at #67 Plane St., Newark, N. J., and am in charge of the record-making department of the American Graphophone Company. I have had a long and extensive experience in the manufacture both of "original" and of "duplicate" sound-records, and have made that manufacture the subject of special study in theory and practice. I am familiar with the methods and appliances used therein. I was employed by the New Jersey Phonograph Co. in 1886, and was appointed general manager thereof in 1891. I was one of the organizers of the United States Phonograph Co., of Newark, N.J., in 1893, was elected president thereof on its organization and held that office until February 1897. During all that time I devoted myself to the manufacture of musical and other sound records.

My knowledge and experience enable me to distinguish upon examination between originals and duplicates, there being differences whereby an expert can distinguish one from the other with certainty, and also generally to tell by what means a particular duplicate was made.

Two practical means of making an engraved copy of an engraved original or master record have been developed up to this time. One of them is the duplicating machine, patented by L.H. Douglass in patent No. 475,480, dated May 24, 1892, in which a column of confined air conveys the vibrations of a diaphragm actuated by the master record to another diaphragm carrying a sound engraving tool acting on the blank tablet. This type of machine has had a limited use.

The other type is that described in the Tainter patent No.341,387 [illegible], and which has been improved by Bettini and Macdonald. In this type the follower and cutting tool are connected by mechanical devices and are generally spoken of as"mechanical" duplicating machines.

On the afternoon of February 2, 1898, Mr. E.N.Burns of the Columbia Phonograph Co., General, brought to me a box containing six sound records which he stated he had just bought from Walcutt & Leeds at their place of business, 53 East 11th St., in this City. I examined these sound-records and found them all to be unmistakably duplicate records. Each had the two distinct marks made when the cutting tool first strikes the tablet, which two marks characterize a duplicate record. An original has but one of these marks, a duplicate has two, one being the copy of that on the original and the other that made by the cutting tool of the duplicating machine when it begins to operate on the blank. In identification I scratched on the bevelled edge of each of these records the word and letters "Duplicate V.H.E." On

the other end they

the other end and they had been marked by Mr. Burns with five nicks in the end and with the words "Bought of Walcutt & Leeds, Feb. 2, 1898, F. N. Burns". The record marked herein "Complainant's Exhibit Defendants' Duplicate Sound-Record" and having the identifying marks just described is one of these records.

All of these records are beyond any doubt the product of duplicating machines of the type I have described as "mechanical" duplicating machines. These duplicating machines, whether of one type or the other are designed specially and solely for the purpose of making engraved sound-records like "Complainant's Exhibit Defendants' Duplicate Sound-Record" and are not susceptible of any other use.

Victor H. Emerson

Subscribed and sworn to before me this 4th day of February, 1898.

Gifford Hervey
Notary Public
N Y Co #95

(No Model.) 3 Sheets—Sheet 1.

S. TAINTER.

RECORDING AND REPRODUCING SOUNDS.

No. 341,287. Patented May 4, 1886.

Fig. 1.

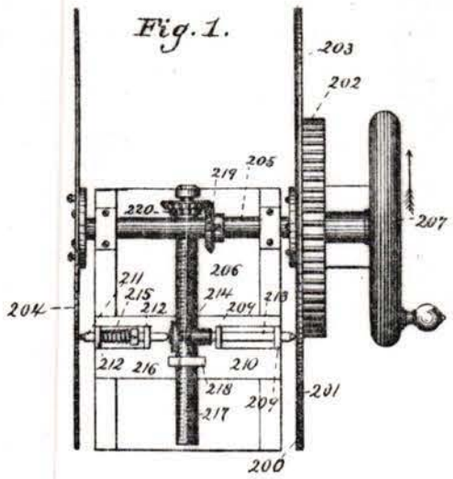


Fig. 2.

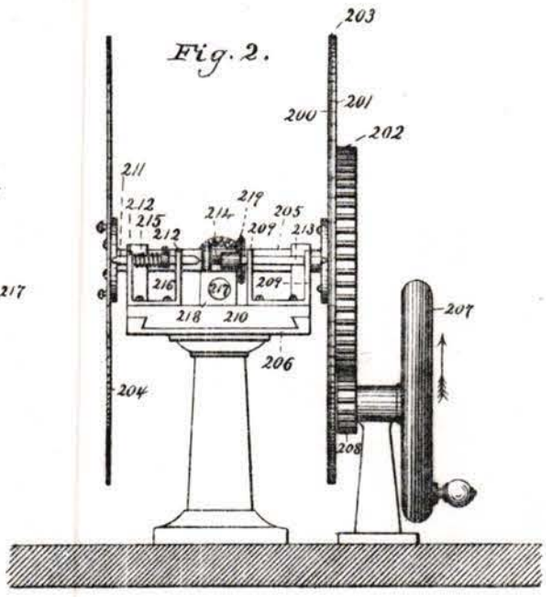


Fig. 1a

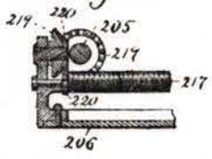
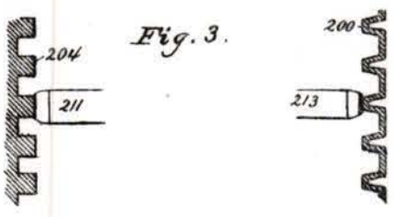


Fig. 3.



Witnesses
Wm. Kirkus. Jnr.
John C. Parker

Inventor
Sumner Tainter
by A. Pollok
his attorney

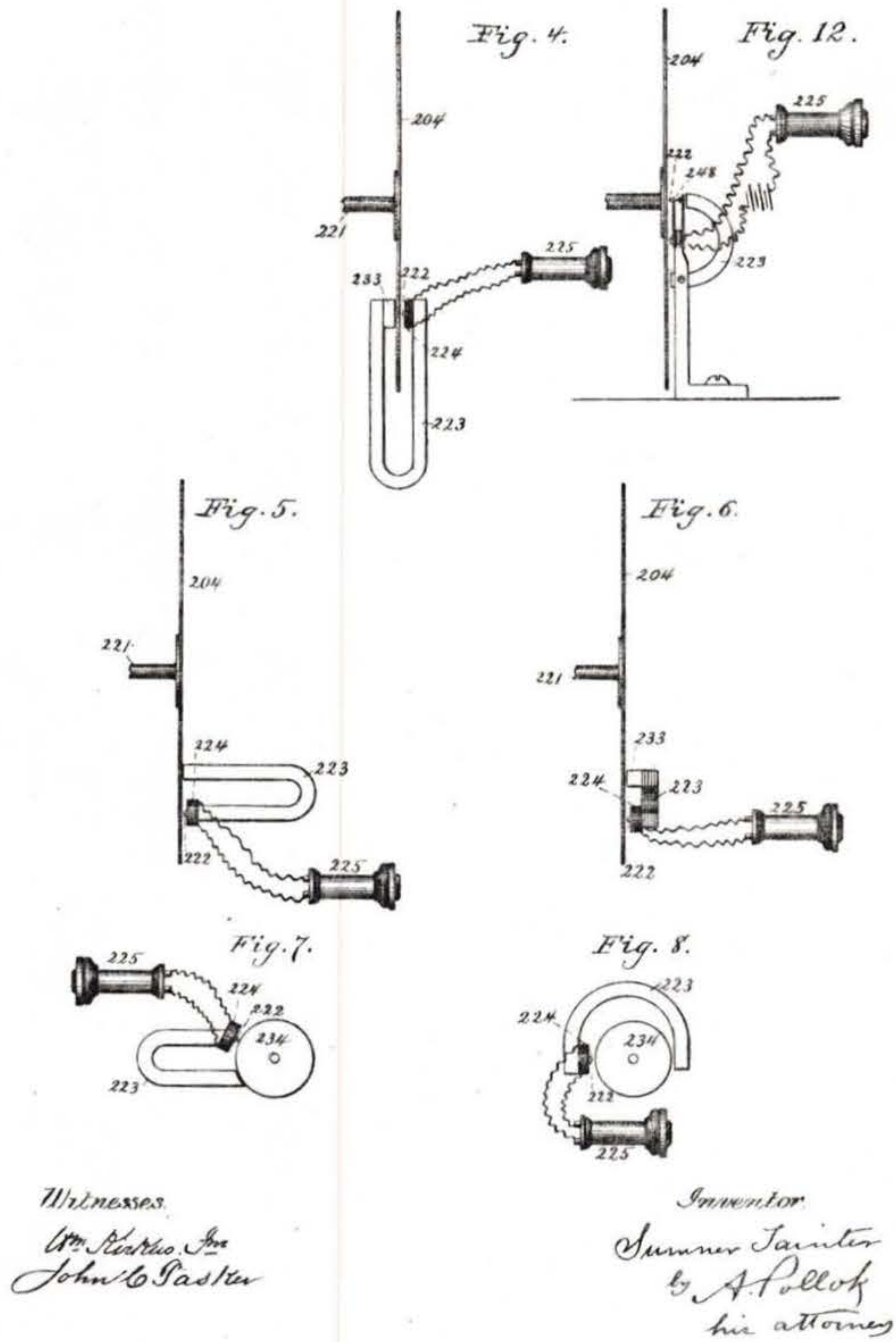
just as they had been doing before being sued and enjoined, and

(No Model.) 3 Sheets—Sheet 2.

S. TAINTER.

RECORDING AND REPRODUCING SOUNDS.

No. 341,287. Patented May 4, 1886.



just as they had been doing before being sued and enjoined, and

(No Model.) 3 Sheets—Sheet 3.

S. TAINTER.

RECORDING AND REPRODUCING SOUNDS.

No. 341,287. Patented May 4, 1886.

Fig. 9.

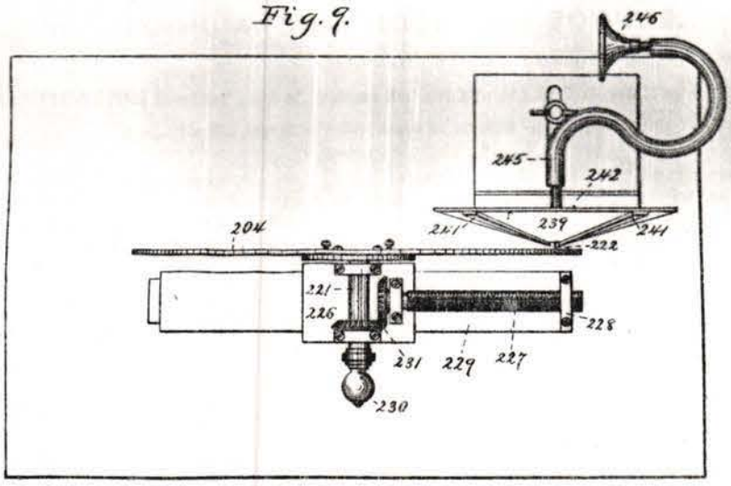


Fig. 10.

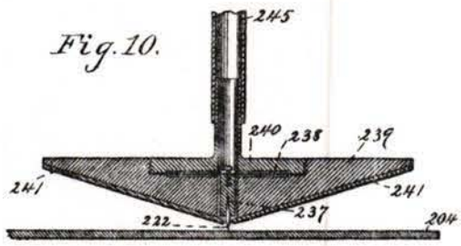


Fig. 11.

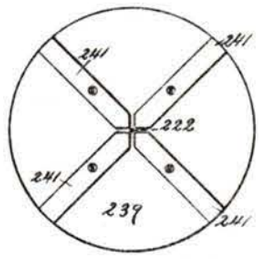
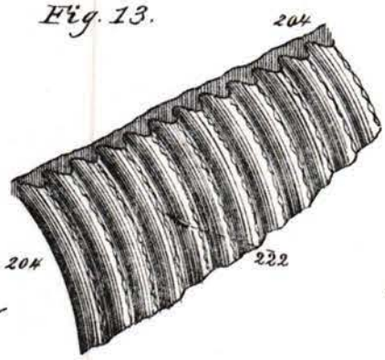


Fig. 13.



Witnesses.
Wm. Keates, Jr.
John C. Paster

Inventor.
Sumner Tainter
by A. Pollok
his attorney

just as they had been doing before being sued and enjoined, and

UNITED STATES PATENT OFFICE.

SUMNER TAINTER, OF WASHINGTON, DISTRICT OF COLUMBIA.

RECORDING AND REPRODUCING SOUNDS.

SPECIFICATION forming part of Letters Patent No. 341,287, dated May 4, 1886.

Application filed August 29, 1885. Serial No. 175,610. (No model.)

To all whom it may concern:

Be it known that I, SUMNER TAINTER, of Washington, in the District of Columbia, have invented a new and useful Improvement in Recording and Reproducing Sounds, which improvement is fully set forth in the following specification.

This invention relates to the reproduction, through the action of magnetism, of sounds by means of records in solid substances. For this purpose it is necessary, first, to prepare the record in a suitable material, (magnetic or diamagnetic.) The material specially adapted to the purpose is of course iron, (using the word broadly as including steel and various grades of iron.) Owing to the hardness of iron, it is not practical to cut the record directly therein by means of a cutting-style vibrated by the action of the voice, as described in application for Letters Patent of the United States of Chichester A. Bell and Sumner Tainter, filed June 25, 1885, and officially numbered 170,044. The same property would interfere with the preparation of records by the Edison method of indenting, which method is, moreover, inferior to the cutting method in sharpness and in compactness of the record.

According to the present invention the record is first cut in a comparatively soft material, (preferably wax or a waxy composition,) and from an electrotype of this or from other suitable record a copy is made in iron or other suitable material by means of a graver or cutting-style which is actuated by the record to be copied. The wax record would not ordinarily have sufficient strength to withstand the pressure to which it would be subjected in cutting the metal, and for this reason the electrotype is made.

Another method of preparing a magnetic record would be to plate a thin film of iron upon an electrotype taken from the wax or other suitable record.

Having prepared a suitable magnetic record, it is necessary to provide means sufficiently sensitive to respond to the record. Heretofore it has been proposed to attach a magnetized needle to a diaphragm and to support the latter so that the point of the needle is in close proximity to the record, (which it was proposed to form by indenting an iron foil.) In the present invention, in addition to the means before stated for improving the quality of the record, means are provided for increasing the sensitiveness of the receiving-instrument.

Instead of depending wholly upon the permanent magnetism of the needle, one or more inducing-magnets are employed, and the record itself is or may be rendered magnetic by induction or permanently. It is also found that excellent results can be obtained by inducing currents in an electric circuit which includes a receiving-telephone. For this purpose a coil should surround the reproducing-needle. Good results have also been secured by means of mechanical receiving devices without the introduction of electric currents.

Instead of inducing magneto-currents in the receiving-circuit, an electric current can be undulated by variations in resistance produced by the vibrations of the needle.

In the accompanying drawings, Figures 1 and 2 are a plan and a front elevation, respectively, of the apparatus for engraving the iron record; Fig. 1^a, a partial view in vertical section, and Fig. 3 a diagram illustrating in plan and horizontal section the forms of the copying-tools and of the electrotype and the iron tablet on which the record is to be made. Figs. 4, 5, 6, 7, and 8 are partial views in elevation of different forms of magneto-electric reproducers constructed in accordance with the invention. Fig. 9 is a plan of a magneto-mechanical reproducer, also constructed in accordance with the invention, or with parts thereof; Figs. 10 and 11, detail views showing in section and front elevation, respectively the principal parts of the reproducer. Fig. 12 is a view showing an arrangement in which the magnetic reproducing-needle is connected with the electrodes of a contact-telephone; and Fig. 13 is an illustration of an iron record in perspective and section, the point of the reproducing-needle being shown in position.

In preparing the iron record according to the best mode to me known, the record is first cut in wax or a waxy composition, as described in the before-mentioned application; but the cutting-style, which is attached to a vibratory diaphragm, has preferably a flat or chisel-like point, so that the recording-tablet is engraved with a spiral groove of trapezoidal cross-section, the elevations and depressions at the bottom of the groove representing

just as they had been doing before being sued and enjoined, and

the forms of the sound-waves which act successively upon the diaphragm of the recording-instrument. As the recording-instrument, tablet, and accessories are fully set out in the before-mentioned application, it is considered unnecessary to repeat them here. From this original wax record an electrotype is taken in copper by known methods—that is to say, the surface of the wax is coated with black-lead, or is otherwise rendered conductive, and is then placed in an electro-plating cell. The electrotype, when of sufficient thickness, say twenty-five one-thousandths of an inch, (0.″025,) is removed from the wax and mounted on a backing, with a thin layer of plaster interposed. As shown in Figs. 1, 2, and 3, the electrotype 200 is mounted on a metal disk, 201, provided with a gear-wheel, 202, at the back. Ground plaster-of-paris is mixed to a thick emulsion with water and applied between the electrotype and the supporting-disk, which are then pressed together until the plaster hardens. The layer of plaster is indicated at 203. The electrotype is of course the counterpart of the original wax phonogram, with the elevations and depressions at the top of a spiral ridge, instead of at the bottom of a groove.

In order to prepare the iron disk 204 for engraving the record thereon a spiral groove is turned in the face of said disk, forming a spiral ridge of the cross-section shown in Fig. 3. The iron disk 204 and the electrotype 200, with its backing 201, are mounted at opposite ends of the shaft 205, being, as shown, bolted to a flange thereon. The shaft 205 is journaled in bearings of the frame 206. It and the disks attached thereto are revolved by means of a crank-wheel, 207, on an independent short shaft, which carries a pinion, 208, engaging the gear-wheel 202 on the disk 201. The slide 210, mounted in ways of the frame 206, carries the graver or cutting-tool 211, it being mounted in guides 212, so that it can be moved toward and away from the iron disk or tablet 204. It is moved toward the iron disk by the electrotype 200, which rubs against the end of the follower 213, the latter being in the form of a square rod sliding in guides 209 on the slide 210. The screw 214 is tapped into the enlarged end of the follower, and the inner or right-hand end of the cutting-tool rests against the end of the screw. A spiral compression-spring, 215, interposed between a collar, 216, on the cutting-tool and left-hand guide 212, tends to press the cutting-tool against the screw 214, and consequently to hold the follower 213 in contact with the electrotype. By turning the screw 214 the cutting-tool can be adjusted to cut to the desired depth. It is a flat-nose tool, and has its point opposite and in contact with the ridge on the iron disk, as shown in Fig. 3. The outer (right-hand) end of the follower is beveled on the four sides, leaving a rounded edge, as shown in Fig. 3, which makes contact with the ridge on the electrotype. The elevations on the electrotype 200 move the follower 213 and cutting-tool 211, so as to take a chip of corresponding depth from the ridge on the iron disk 204. The depressions on the electrotype allow the spring 215 to move the follower and cutting-tool to the right, so that a smaller chip or none at all is taken from the iron ridge. Thus the counterpart of the elevations and depressions on the electrotype is formed on the iron disk. The record engraved on the latter, therefore, is like the original wax record from which the electrotype was taken.

The slide 210 is engaged by a screw 217, which revolves in a bearing in the frame 206, so constructed as to prevent endwise motion of the screw. The screw is tapped through an ear, 218, on the slide. It is connected with the shaft 205 by the bevel-gears 219 and spur-gears 220. Thus at each revolution of the disks the slide is drawn forward a distance equal to the pitch of the spiral ridges on the electrotype and iron disk.

If the iron be too hard, or if for other reason it is not desired for it to be cut to the full depth at one operation, the cutting-tool can be adjusted by the screw 214 first to cut shallow, and then, when the parts have been returned, adjusting it and causing it to cut deeper, and so on until the desired depth is reached.

Having obtained the engraved magnetic tablet, it is mounted on the shaft 221 of a reproducing-instrument. As shown in Fig. 4, the reproducing-needle 222 is mounted on one pole of a horseshoe-magnet, 223, the other pole of which is placed directly opposite, the magnetic record intervening. A pole-piece, 233, brings the pole close to the back of the tablet or disk 204. Thus the needle and the record or tablet are both magnetized by the induction of the magnet. From the proximity of the poles the intensity of the field is very considerable. The needle (which may be of any suitable size and shape, but should terminate in a point or edge, and be either of soft iron or steel) is surrounded by a bobbin, 224, of fine insulated wire. The telephone 225 (shown as the hand-telephone in common use) is included in circuit. The reproducing-needle has its point opposite the ridge on the tablet and in as close proximity thereto as possible without touching. Fig. 13 shows the position, the record being formed by elevations and depressions on the top of the ridges, which are rounded instead of square, as in Fig. 3. As the tablet or iron disk 204 is revolved, the elevations and depressions on the ridge successively come opposite the needle-point and produce changes in the magnetic field, which in turn induce currents in the bobbin 224 and telephone 225. Sounds corresponding to these changes, and consequently also to the record on the iron disk or tablet, are emitted by the telephone.

Any ordinary or suitable mechanism may be employed for causing the needle to follow the spiral ridge or record on the tablet or disk

a magnetic reproducing-needle in the field of said magnet or magnets, substantially as described.

10. The combination, with a magnetized sound-record, of a magnetic reproducing-needle, said record being magnetized independently of any magnetism induced therein by the needle, substantially as described.

11. The combination, with a magnetic record, the magnetic reproducing-needle, and the inducing magnet or magnets, substantially as described.

12. The combination, with a magnetic record, of a magnetized reproducing-needle, a bobbin of insulated wire in the field of said needle, and a telephone-circuit including the bobbin, substantially as described.

13. The combination, with an engraved record in magnetic material, of the magnetized reproducing-needle, substantially as described.

14. The combination, with a tablet having a record formed therein and a tablet for receiving a record, of a follower having a fine though blunt edge for rubbing over the record, a non-rotating cutter movable with said follower for engraving the record in the second tablet, and mechanism for revolving said tablets and causing the follower to follow the record, and the cutter to trace a spiral line upon the second tablet, substantially as described.

15. The combination, with the two tablets and the operating mechanism, of the follower having a fine though blunt edge for rubbing over the record, the spring for holding it against the record, the non-rotatory cutter, and the adjustable connection between the follower and the cutter to enable the depth of cut to be regulated, substantially as described.

16. The method of preparing sound-records, consisting in first cutting the record in a soft material—such as wax—by the action of sound-waves upon a vibratory cutting-style, and then causing said wax record or a copy of the same to impress corresponding vibrational movements upon a graver or cutting-tool in contact with a record-tablet, substantially as described.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

SUMNER TAINTER.

Witnesses:
PHILIP MAURO,
C. J. HEDRICK.

(No Model.)

T. H. MACDONALD.

DEVICE OR APPARATUS FOR DUPLICATING GRAPHOPHONE RECORDS.

No. 559,806. Patented May 12, 1896.

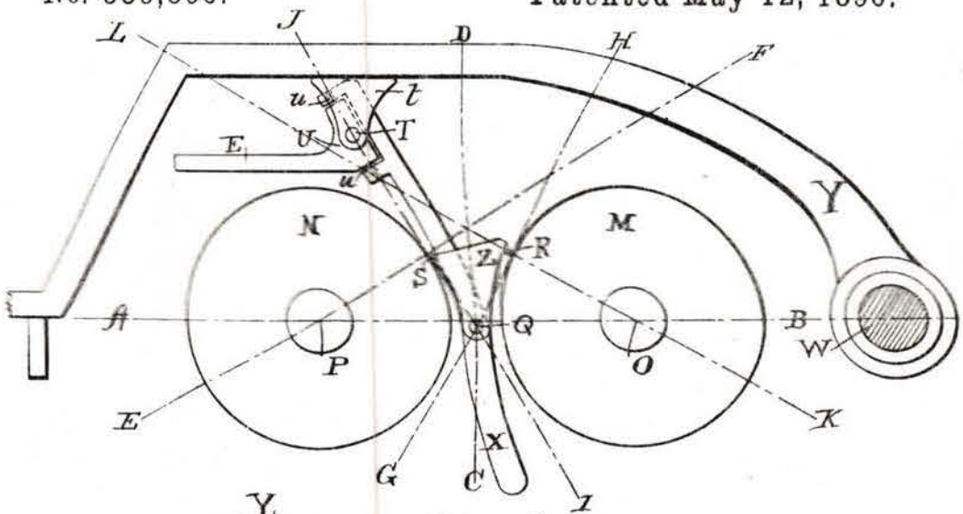


Fig. 1.

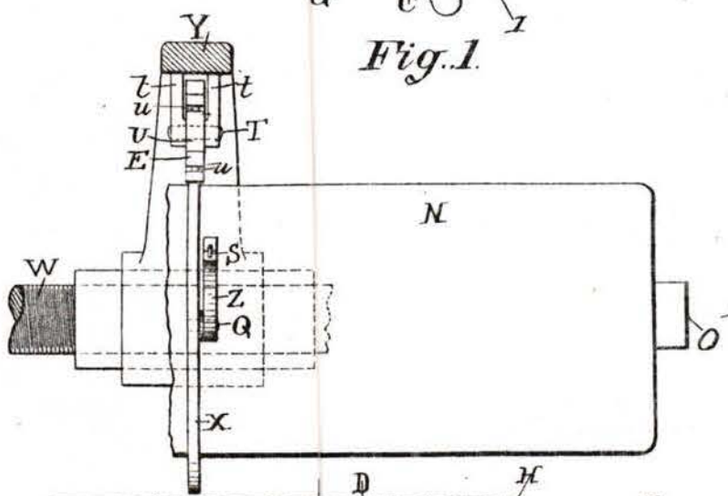
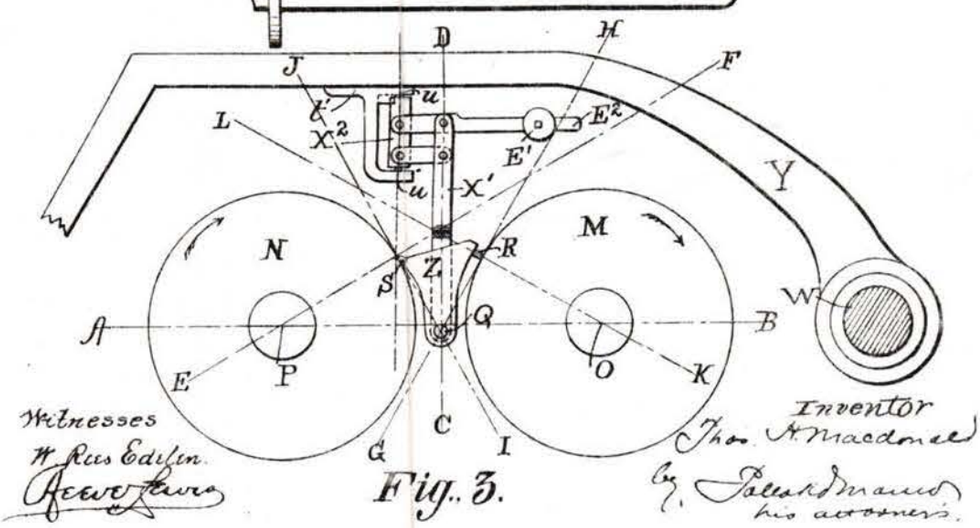


Fig. 2.



Witnesses
W. Rees Edson.
Reeve Lewis

Fig. 3.

Inventor
Thos. H. Macdonald
By Paul & Mann
his attorneys.

ANDREW B. GRAHAM, PHOTO-LITHO, WASHINGTON, D.C.

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341,287

a magnetic reproducing-needle in the field of said magnet or magnets, substantially as described.

10. The combination, with a magnetized sound-record, of a magnetic reproducing-needle, said record being magnetized independently of any magnetism induced therein by

lets and causing the follower to follow the record, and the cutter to trace a spiral line upon the second tablet, substantially as described.

15. The combination, with the two tablets and the operating mechanism, of the follower having a fine though blunt edge for rubbing

just as they had been doing before being sued and enjoined, and

UNITED STATES PATENT OFFICE.

THOMAS H. MACDONALD, OF BRIDGEPORT, CONNECTICUT, ASSIGNOR TO THE AMERICAN GRAPHOPHONE COMPANY, OF WEST VIRGINIA.

DEVICE OR APPARATUS FOR DUPLICATING GRAPHOPHONE-RECORDS.

SPECIFICATION forming part of Letters Patent No. 559,806, dated May 12, 1896.

Application filed December 4, 1895. Serial No. 571,083. (No model.)

To all whom it may concern:

Be it known that I, THOMAS H. MACDONALD, of Gridgeport, Connecticut, have invented a new and useful Improvement in Devices or Apparatus for Duplicating Graphophone-Records, which is fully set forth in the following specification.

This invention has reference to devices or apparatus for duplicating graphophonic records. In such apparatus as heretofore constructed the reproducing and recording styles have usually been carried by separate levers connected by suitable intermediate links, diaphragms, &c., the pressure requisite to cut the duplicate record being transmitted through the pivot-points of the levers by suitable weights or other equivalent means. Such devices not only require very painstaking adjustment, but owing to their delicacy of structure are very susceptible to injury.

The object of my present invention is to provide a much simplified construction of a substantial character and which will duplicate records with greater precision than the duplicating devices heretofore in use. In accordance therewith the reproducing and recording styles are rigidly connected, both being carried by a lever to which vibratory movements are imparted by the master record and whereby the reproducing-style is caused to cut in a blank a duplicate corresponding to the master record. This lever is pivoted to an arm, which is arranged (at an inclination or otherwise) so that the weight thereof falls upon the point of pivot to hold the styles in contact with their respective cylinders. Said arm, which may for distinction be called the "pressure-arm," is pivoted at one end to swing therefrom and is also swiveled, permitting movement about a longitudinal axis. The pressure exerted by the pressure-arm may and is preferably counteracted to some extent by a weight operating from the pivot-point of said arm, thus permitting the latter to be made much heavier and more substantial and giving it greater inertia than would otherwise be permissible with a device of this general construction. As the blank cylinder revolves against the cutting-point of the recorder a groove is cut in its surface exactly corresponding to that of the master record, the reproducing-point following and accurately transmitting to the recorder the movements due to variations in the depth of cut of the master record. The recording-point is in the line of the axis on which the pressure-arm is swiveled longitudinally, so that the reproducing-point can find its adjustment accurately without disturbing the position of the recorder.

Details of arrangement and what is considered the best embodiment of my invention in an operative machine will be clearly understood by reference to the accompanying drawings, forming part of this specification, in which—

Figure 1 represents a cross-section of an apparatus embodying the invention; Fig. 2, an elevation, partly in section; and Fig. 3, a view similar to Fig. 1, illustrating another form of apparatus embodying the invention.

Referring to Figs. 1 and 2, Y represents a traveling supporting-arm engaging a feed-screw W at one end and sliding on a rail V at its other end. M is the master-record cylinder, and N the blank cylinder for receiving the duplicate, said cylinders being horizontally arranged parallel to each other and carried by suitable mandrels connected with and driven at the same speed by suitable mechanism in a well-known manner. Z is a lever carrying the reproducing-point R and the recording-point S. This lever is pivoted at Q to pressure-lever X, arranged at an inclination and swiveled upon the pins *u u*, projecting into sockets in a block U to turn about a longitudinal axis. The block U, carrying a weighted arm E, counteracting to some extent the pressure exerted by the lever X upon the points R and S, is pivoted at T to a bifurcated bracket *t*, depending from the arm Y. The weighted lever or pressure-arm X is thus pivoted at T to swing in a plane at right angles to the axis of the record-cylinders and on the points *u* to oscillate slightly on an axis tangent to cylinder N.

To state with geometrical precision that relation and arrangement of the parts which has in actual practice been found to produce the best results, but to which the invention is not limited, it is preferable to locate the pivot-point Q of lever Z at the intersection

just as they had been doing before being sued and enjoined, and

of two corresponding tangent lines I J and G H, said point of intersection being near a horizontal line A B, projected through the axes O and P of the cylinders M and N, while the recording and reproducing points S and R bear against the cylinders at the respective tangent points of the said lines I J and G H. The swivel-pins *u u* are also in the tangent line I J in which the recording-point is located, so that the oscillating movement of the arm X is about the line I J as an axis. Consequently the reproducing-point R can find a lateral adjustment without affecting the position of the recording-point S. It will be noted that the pivot-points T and Q and the swivel-points *u u* are all in line with the recording-point S, the object of this disposition being to prevent distortion.

From the foregoing description it will be understood that the weight of arm X, swinging from pivot-point T and acting upon fulcrum Q of lever Z, supplies the pressure in the direction of line C D for holding the points R and S in contact with the cylinders M and N, which pressure it is found desirable for the reasons indicated to counteract to some extent by the weight E. Thus as the cylinders rotate in the direction of the arrows the variations in depth of the master record cause the point R to move in the direction of the radial line L K of cylinder M, vibrating the lever Z on the pivot Q, and in turn imparting movements to the point S in the direction of the radial line E F of cylinder N, and thereby causing it to cut a record in the blank N exactly corresponding to the master record.

Referring now to Fig. 3, the lever or support Z for the recording and reproducing points is, as before, pivoted at Q to a pressure-arm X′, the point Q being at the intersection of the two tangent lines I J and G H, drawn from the respective points of contact of the recorder and reproducer with cylinders M N. Arm or lever X′ is depressed by the counterweight E′, adjustable on lever E^2. In order to secure parallelism of movement of lever X′, it is made part of a pantograph system, the parallel arm X^2 being swiveled at points *u u* in the bracket *t*′, so as to permit a slight oscillation, as in the arrangement shown in Fig. 1. This axis of oscillation is in a line which intersects recording-point S. The operation of the apparatus shown in Fig. 3 is substantially as already described with reference to Figs. 1 and 2.

The disposition and arrangement of the several parts have been described with minuteness of detail for the purpose of exhibiting the invention in the best practical forms known to me.

It will be obvious to skilled mechanics that these details may be varied within wide limits without departing from the spirit of the invention.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A device for duplicating graphophone-records comprising, in combination, a lever mounted to vibrate between a master record and a blank, a reproducing and a recording style carried by said lever, and means for applying pressure to the lever whereby said styles are respectively maintained in contact with the master record and blank, substantially as described.

2. A duplicating apparatus comprising, in combination, a support mounted to vibrate between a master record and a blank, a reproducing and a recording style secured rigidly to said support, and a pivoted pressure-arm carrying the fulcrum of the support and holding the styles with yielding pressure respectively in contact with the master record and blank, substantially as described.

3. In a graphophonic duplicating device, the combination with a suitable support, of a lever carrying the reproducing and recording styles, said lever being mounted to have a vibratory movement between a master record and a blank, and an oscillatory movement on an axis intersecting the point of the recording-style, substantially as described.

4. In a duplicating device, the combination with a supporting-arm, of a lever carrying the reproducing and recording styles and mounted to vibrate between the master record and blank, a pressure-arm pivotally supported from said supporting-arm, carrying the fulcrum of said lever, and swiveled to oscillate slightly about a longitudinal axis, substantially as described.

5. A duplicating apparatus comprising in combination a lever carrying the reproducing and recording styles, and mounted to vibrate between the master record and blank, and a pivotally-supported weighted arm carrying the fulcrum of the lever and swiveled to oscillate about a longitudinal axis passing through the recording-style and the fulcrum of the lever, substantially as described.

6. In a duplicating apparatus, the combination of a lever carrying the reproducing and the recording styles and mounted to vibrate between the master record and blank, a pivoted weighted arm carrying the fulcrum of said lever, and means for partially counteracting the weight of said arm, substantially as described.

7. In a duplicating apparatus, the combination with a supporting-arm, of a pivoted lever carrying the reproducing and recording styles and mounted to vibrate between the master record and the blank, a block pivotally connected to said supporting-arm, a weighted pressure-arm swiveled to said block and carrying the pivot of the lever, and a weighted arm on the block acting to partially counteract the pressure of the arm, substantially as described.

8. In a duplicating apparatus, the combination of the weighted pressure-arm, a lever fulcrumed thereon between the master record and blank, a reproducing-point and a record-

ing-point pressed by the weight of said arm into contact with the said master record and blank, respectively, the fulcrum of said lever being at the intersection of tangent lines drawn respectively from the [illegible] of the re- [illegible] as described.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

THOMAS H. MACDONALD.

Witnesses:
G. L. HUBBELL,
[illegible]

204—as, for example, that shown in Fig. 9, wherein the shaft 221 is mounted on a slide, 226, which is connected by the screw 227 with an ear, 228, on the frame 229, (the screw revolving in a bearing on the slide, and being tapped through the ear 228,) so that as the shaft 221 is turned by the crank 230 the screw 227 is revolved by the bevel-gears 231, and the disk 204 is given a translatory as well as a rotary motion.

In Fig. 5, instead of having the tablet or disk interposed between the poles of the magnet, both the poles are opposite the face of the tablet. In Fig. 6 the arrangement is similar, except that the side instead of the ends of the magnet is turned toward the tablet.

In Figs. 7 and 8 the tablet is shown as a cylinder, 234. The magnet in Fig. 7 has both poles on the same side of the cylinder, while in Fig. 8 it spans the same. The surface of the cylinder should be engraved the same as described for the disk 204, and the cylinder can be operated by the well-known means employed in the ordinary Edison phonograph, or by other suitable mechanism.

In the arrangement shown in Figs. 9, 10, and 11 the needle 222 is set in a holder, 237, of non-magnetic material, (preferably hard rubber,) which is attached to the center of a thin diaphragm, 238, (see Fig. 10,) which is confined at the edges by and between the block 239 and screw-plate 240. A series of four bar-magnets, 241, are secured on the face of block 239, with their like poles in proximity to the needle 222, so as to magnetize the same, or to increase its magnetism by induction. The ends of the magnets are pointed, as shown in Fig. 11. The block 239 is mounted upon a bracket, 242, which is adjustably secured in place by means of a screw passing through a slot in the base of the bracket and engaged by a set-nut. The screw-plate 240 is perforated, and the round conveying-tube 245, provided with an ear-piece, 246, is in communication with the space behind the diaphragm through the perforation. The bracket 242 having been adjusted to bring the needle-point in the desired proximity to the tablet or disk 204, the latter is revolved. The variations in the surface of the tablet cause variations in the magnetic field, and produce a varying attraction of the magnetized needle, and consequently throw the diaphragm 238 into vibrations, which in turn are communicated to the air in the tube 245, and by it conveyed to the ear of the listener.

In Fig. 12 the varying attraction between the needle and the tablet produces variations in pressure between the electrodes 248 of a microphone or contact-telephone, and thereby produce undulations in the current passing from one electrode to the other. These electrical undulations are converted into sound-waves by an ordinary receiving-telephone.

It is evident that modifications may be made in details without departing from the spirit of the invention, and parts of the invention may be used separately. The preparation of an engraved iron record and the magnetic reproduction of sounds from such engraved record constitutes an important feature of the invention; yet as certain features in the reproducing means described are new in and of themselves it is not designed to limit the invention to the use of such means in combination with the engraved record. In like manner the engraved iron record is believed to be new in and of itself; also, the means for transferring from one tablet to another by means of a cutting-tool, although designed expressly for the production of engraved iron records, are believed to possess novelty, irrespective of the nature of the material used.

Having now fully described the said invention and the manner of carrying the same into effect, what I claim is—

1. The improvement in the reproduction of sounds by records in solid substances, consisting in engaving or cutting the record in magnetic material, cat ing by means of such record corresponding variations in the field of a magnetized needle, and converting the magnetic variations into sound-waves, substantially as described.

2. The method of producing a magnetic record by first cutting the record in a soft material—such as wax—and then producing from such original a copy in the magnetic material, substantially as described.

3. The method of producing an engraved record in magnetic material by preparing a record in a softer material, and then causing said record or a copy of the same to impress movements corresponding to sound-vibrations upon a cutting-tool in contact with the said magnetic material, substantially as described.

4. The method of copying sound-records by causing the record which is to be copied to impress movements corresponding to the recorded sound-waves upon a cutting-tool, and thereby engraving or cutting out a similar record in the surface of a suitable tablet, substantially as described.

5. The method of reproducing sounds from magnetic records by causing said records to produce changes in the field of a magnetized needle, and thereby inducing electric currents in a coil in said field, and converting said currents into sound-waves, substantially as described.

6. An engraved sound-record in magnetic material, substantially as described.

7. A sound-record in magnetic material having a spiral ridge, the irregularities constituting the record being formed in the top of the ridge, substantially as described.

8. A tablet of magnetic material having a spiral groove turned in the surface thereof, and a sound-record formed in the top of the ridge between the convolutions of the groove, substantially as described.

9. The combination, with a sound-record in magnetic material, of a magnet or magnets and

the forms of the sound-waves which act successively upon the diaphragm of the recording-instrument. As the recording-instrument, tablet, and accessories are fully set out in the before-mentioned application, it is considered unnecessary to repeat them here. From this original wax record an electrotype is taken in copper by known methods—that is to say, type. The elevations on the electrotype 209 move the follower 213 and cutting-tool 211, so as to take a chip of corresponding depth from the ridge on the iron disk 204. The depressions on the electrotype allow the spring 215 to move the follower and cutting-tool to the right, so that a smaller chip or none at all is taken from the iron ridge. Thus the result

just as they had been doing before being sued and enjoined, and

ing-point pressed by the weight of said arm into contact with the said master record and blank, respectively, the fulcrum of said lever being at the intersection of tangent lines drawn respectively from the points of the recorder and reproducer, substantially as described.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

THOMAS H. MACDONALD.

Witnesses:
G. L. HUBBELL,
CLEMENT MARCH.

of two corresponding tangent lines I J and G H, said point of intersection being near a horizontal line A B, projected through the

1. A device for duplicating graphophone-records comprising, in combination, a lever

just as they had been doing before being sued and enjoined, and

(No Model.)

G. BETTINI.

PHONOGRAPH.

No. 488,381. Patented Dec. 20, 1892.

Fig. 1,

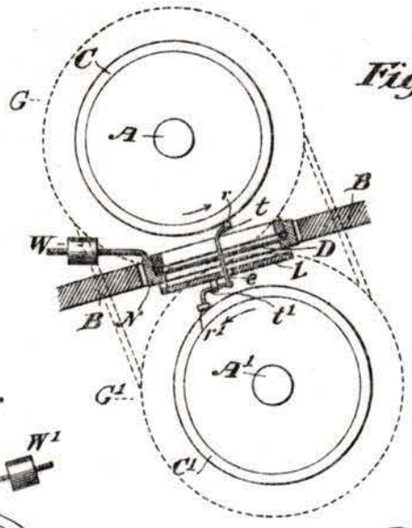


Fig. 3,

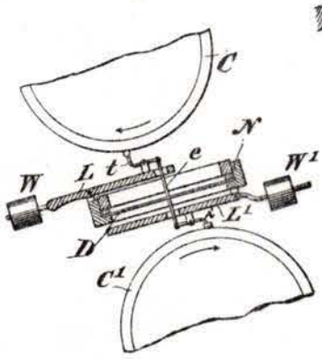


Fig. 4,

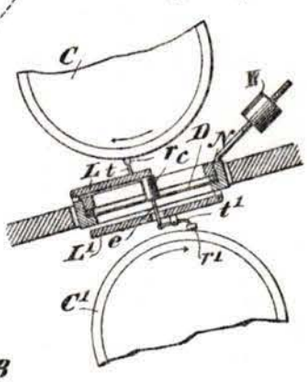
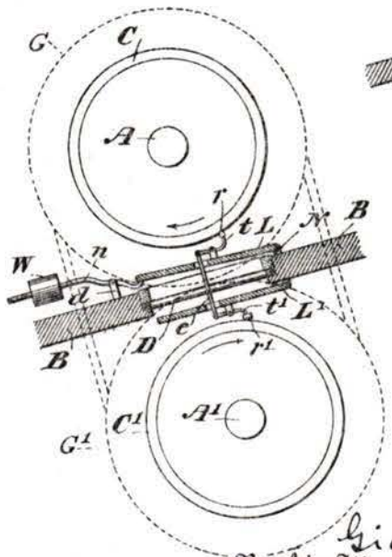


Fig. 2.



Witnesses
C. E. Ashley
H. W. Lloyd.

Inventor
Gianni Bettini
By his Attorney
Charles J. Kintner

just as they had been doing before being sued and enjoined, and

UNITED STATES PATENT OFFICE.

GIANNI BETTINI, OF NEW YORK, N. Y.

PHONOGRAPH.

SPECIFICATION forming part of Letters Patent No. 488,381, dated December 20, 1892.

Application filed March 14, 1892. Serial No. 424,815. (No model.)

To all whom it may concern:

Be it known that I, GIANNI BETTINI, a subject of the King of Italy, and a resident of New York, in the county of New York and State of New York, have made certain new and useful Improvements in Phonographs, of which the following is a specification.

My invention is directed particularly to a novel apparatus for duplicating phonographic records, and its object is to simplify and cheapen the present expensive methods of making records where it is desired to place the same record upon many phonogram surfaces or cylinders. I accomplish this object with the apparatus hereinafter described, but particularly pointed out in the claims at the end of this specification.

In order that my invention may be fully understood reference is had to the accompanying drawings, in all of which like letters of reference represent like parts wherever used.

All of the figures of the drawings (four in number) are sectional views of modified forms of my novel apparatus designed to accomplish the result above indicated—

Referring first to Figure 1—A represents the axis—and C a phonogram cylinder carried thereby, and upon which has been placed a record which it is desired to duplicate mechanically.

B B represent parts of the frame of the apparatus which sustain my reproducing device.

C′ represents another phonogram cylinder upon which it is desired to make a duplicate record, this cylinder being carried by an axis (A′) parallel to the axis (A).

G G′ are pulleys carried by the axes A and A′ and connected together by a belt or cord so that they will rotate with the axes (A and A′) and cylinders (C C′).

N is a diaphragm supporting ring in which is secured a diaphragm D, this ring being in this instance pivotally supported on an axis parallel with the axes (A and A′) and provided with a regulating arm and adjustable weight (W). To the upper side of the diaphragm is attached a record reproducing stylus (*t*) and to the lower side of this diaphragm is secured a pivoted recording or record producing stylus (*t′*) the fulcrum of which is attached to a lever (L) the arrangement being such that the free end of the pivoted reproducing stylus (*t′*) is adapted to bear upon the surface of the duplicating phonogram cylinder (C′). The lever (L) it will be observed is pivoted at one end to the ring (N), and the arrangement is such that the reproducing stylus (*t′*) will follow accurately the movements of the stylus (*t*).

The operation of this apparatus is as follows:—The axis (A) is set in motion in its usual way in the direction of the arrow, the stylus (*t*) having been properly adjusted in connection with the original record upon the phonogram cylinder (C) and the recording or record producing stylus (*t′*) having been properly adjusted to bear upon the surface of the cylinder (A′) with the desired pressure through the agency of the adjustable weight (W). The pulley (G) therefore, transmits to the pulley (G′) motion in the direction of the lower arrow, so that the cylinder (C′) rotates in the same direction as does the cylinder (C), and a correct record is therefore, transmitted from the stylus (*t*) through the link (*e*) and diaphragm (D) to the pivoted recording or record producing stylus (*t′*), thus causing the part *r′* to cut or produce in the cylinder (C′) an accurate duplication of the record on the cylinder (C). After the record has been thus duplicated the second cylinder (C′) may be removed and the operation repeated with duplicate cylinders for an indefinite number of times. In the form shown in Fig. 2 the diaphragm (D) is fixedly secured to the parts (B) of the frame and the adjustable feature, [which is attributable in Fig. 1 to the pivoted diaphragm, adjustable weight (W) and pivoted lever (L)] is effected through the agency of two pivoted levers (L and L′) adjustable weight (W) and a third lever (*n*) the latter pivotally secured to one part (B) on a standard (*d*) with its short arm under the free end of the upper lever (L). In this instance it will be noted that the styles (*t* and *t′*) are pivoted respectively to the levers (L and L′) and are joined to each other through the agency of the diaphragm (D) and a rigid wire or connecting link (*e*).

The mode of operation of the form shown in Fig. 2 is not essentially different from that shown in Fig. 1.

In the form shown in Fig. 3, the diaphragm is rigidly supported, the same as in Fig. 2 and

just as they had been doing before being sued and enjoined, and

(No Model.) 4 Sheets—Sheet 4.

C. A. BELL & S. TAINTER.

RECORDING AND REPRODUCING SPEECH AND OTHER SOUNDS.

No. 341,214. Patented May 4, 1886.

Fig. 18.

adjustable weights (W and W') are secured to the outer ends of the levers (L and L') the styles (*t* and *t'*) being pivotally secured to these levers and attached to each other through link (*e*) and diaphragm (D).

In Fig. 4 the diaphragm ring (N) is pivoted to the parts (B B) the same as in Fig. 1, and the stylus (*t*) is attached directly to the free end of the lever (L). This lever is pivoted at its other end directly to the diaphragm ring (N) and its free end connected directly to the diaphragm by a piece of cork (*c*), the diaphragm, in turn, being connected to the lower stylus (*t'*) by a link (*e*). The stylus (*t'*) is pivoted as in Fig. 1 to a lever (L').

In Figs. 3 and 4, the pulleys (G and G') are not shown although it will be understood that some means of operatively connecting the two phonogram cylinders (C C') will always be required. Of course other means than pulleys may be utilized for rotating the cylinders (C and C') together. The operation of these modified forms is entirely obvious in view of the description and the mode of operation of the modified forms illustrated in Fig. 1.

I do not limit myself to the specific forms of mechanism herein shown and described for duplicating phonogram records, as I believe I am entitled to claim broadly apparatus for duplicating such records through the agency of connected pivoted styles and my claims are generic in this particular.

I am aware of the record reproducing apparatus shown in Figs. 1 and 2 of the drawings of patent to S. Taintor, No. 341,287, granted May 4, 1886, and I make no claim hereinafter broad enough to include such a structure or any method involved in the use of such structure.

Having thus described my invention, what I claim and desire to secure by Letters-Patent of the United States is:—

1. A pair of independent phonogram surfaces, one of which has a record on its face; intermediate gearing as a belt and pulleys for causing said surfaces to move simultaneously; a stylus adapted to follow the conformation of the record, and a second stylus with intermediate connections adapted to reproduce the record on the second surface—substantially as described—

2. A pair of independent phonogram surfaces, one of which has a record on its face; intermediate gearing as a belt and pulleys for causing said surfaces to move together; a stylus resting on the record on the first surface; a second stylus resting on the face of the second surface, and an intermediate elastic or yielding support as a diaphragm with adjustable connections, as described—

3. A pair of independent phonogram cylinders sustained by parallel axles geared together, one of said cylinders having a record on its face; a reproducing stylus adapted to follow this record; a recording stylus attached to the reproducing stylus by intermediate connections, and adapted to make a duplicate record on the face of the second cylinder—substantially as described—

4. A pair of phonogram cylinders sustained by parallel axles geared together, one of said cylinders having a prepared record on its face; a pivoted reproducing stylus fulcrumed to a lever; a pivoted record producing stylus resting normally on the face of the second phonogram cylinder and fulcrumed to a second lever with connections between said styles, whereby a duplicate record is made upon the face of the second cylinder, as the two are revolved—substantially as described—

GIANNI BETTINI.

Witnesses:
C. J. KINTNER,
F. GRIESSMAN.

(No Model.) 4 Sheets—Sheet 4.

C. A. BELL & S. TAINTER.

RECORDING AND REPRODUCING SPEECH AND OTHER SOUNDS.

No. 341,214. Patented May 4, 1886.

Fig. 18.

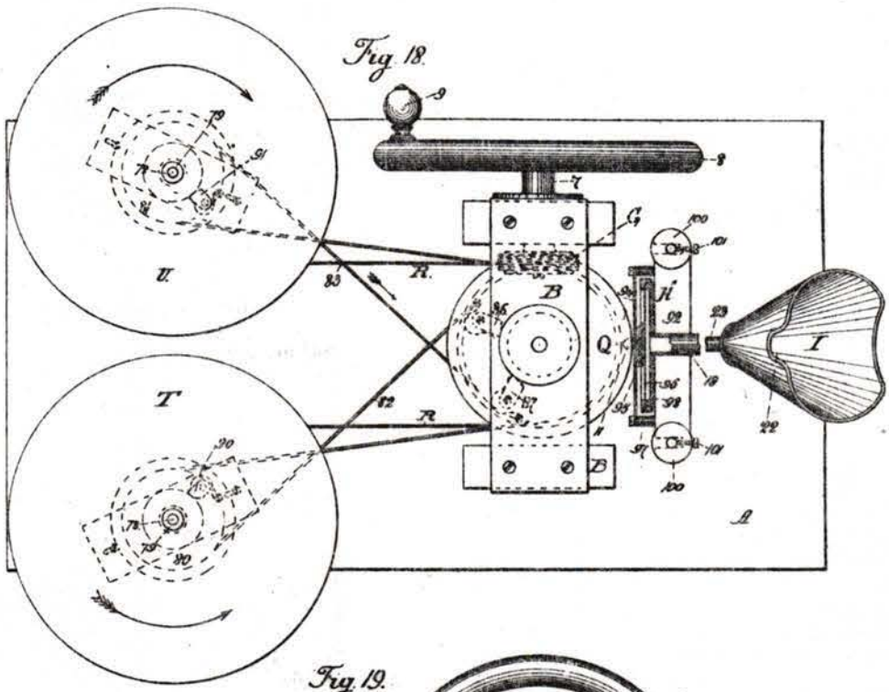


Fig. 19.

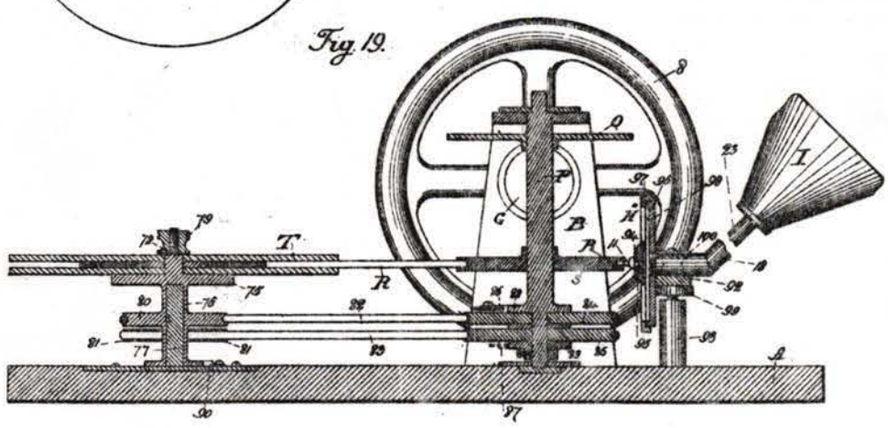
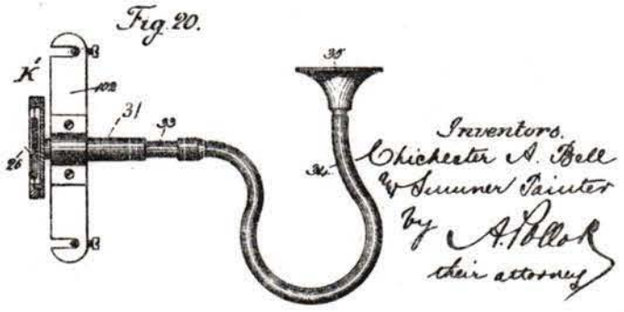


Fig. 20.



Witnesses.
Wm. Hutton Jr.
C. J. Hedrick

Inventors.
Chichester A. Bell
& Sumner Tainter
by A. Pollock
their attorney

just as they had been doing before being sued and enjoined, and

(No Model.) 4 Sheets—Sheet 3.

C. A. BELL & S. TAINTER.

RECORDING AND REPRODUCING SPEECH AND OTHER SOUNDS.

No. 341,214. Patented May 4, 1886.

Fig. 14.

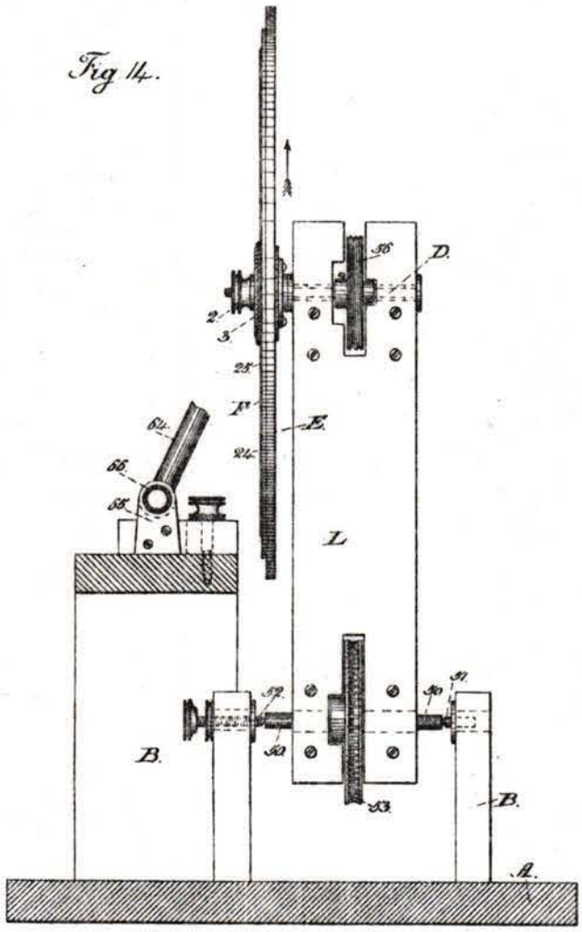


Fig. 21.

Fig. 15.

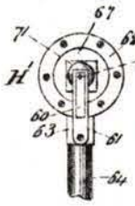


Fig. 16.

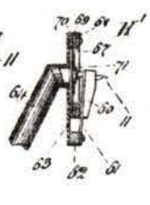


Fig. 17.

Witnesses.
Wm. Kirkus, Jr.
C. J. Hedrick

Inventor.
Chichester A. Bell
by Summer Tainter
by Pollock
their attorney

just as they had been doing before being sued and enjoined, and

(No Model.) 4 Sheets—Sheet 2.

C. A. BELL & S. TAINTER.

RECORDING AND REPRODUCING SPEECH AND OTHER SOUNDS.

No. 341,214. Patented May 4, 1886.

Fig. 12.

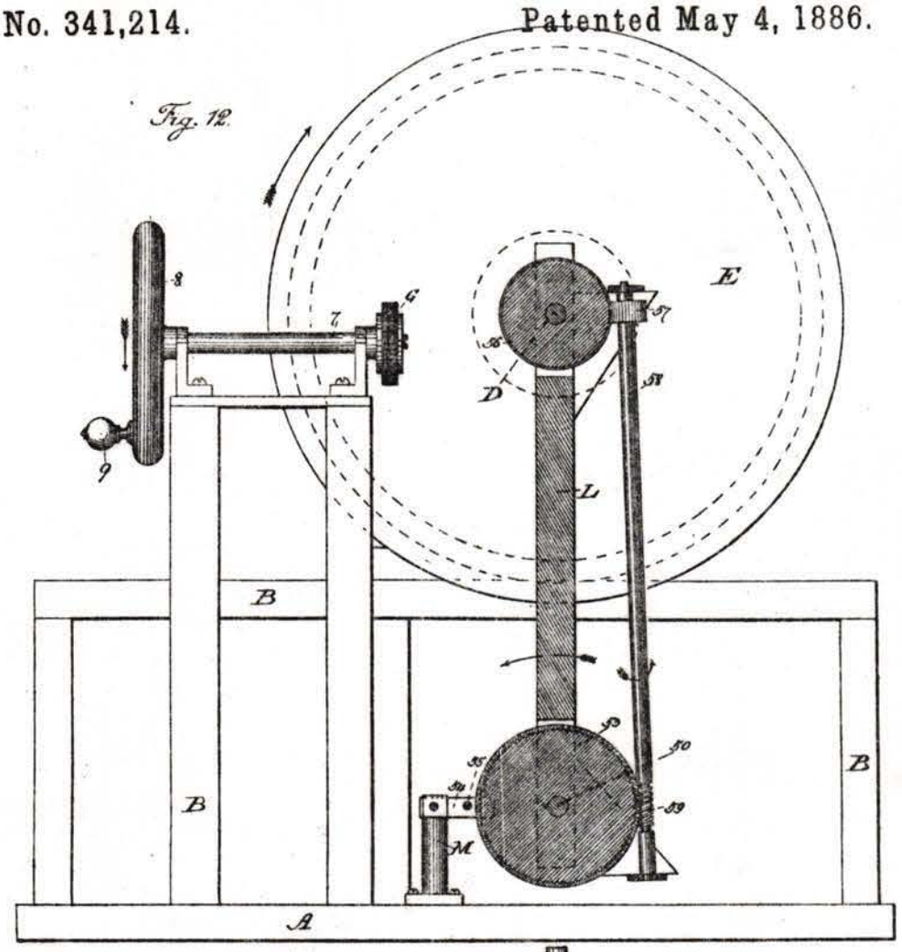
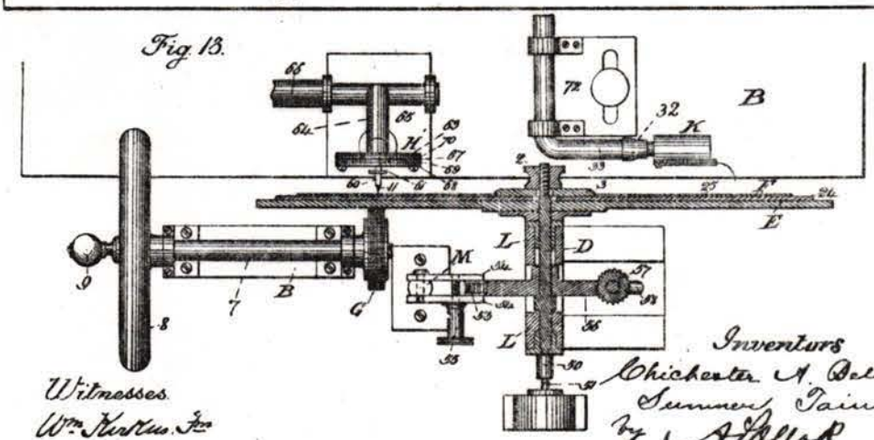


Fig. 13.



Witnesses.
Wm. Hutton, Jr.
C. J. Hedrick

Inventors
Chichester A. Bell &
Sumner Tainter,
by A. Pollok
their attorney

just as they had been doing before being sued and enjoined, and that they were even installing additional duplicating machines. I interrogated said Walcutt as to the use he intended to [illegible] they were for use with [illegible]

(No Model.) 4 Sheets—Sheet 1.

C. A. BELL & S. TAINTER.

RECORDING AND REPRODUCING SPEECH AND OTHER SOUNDS.

No. 341,214. Patented May 4, 1886.

Fig. 1.

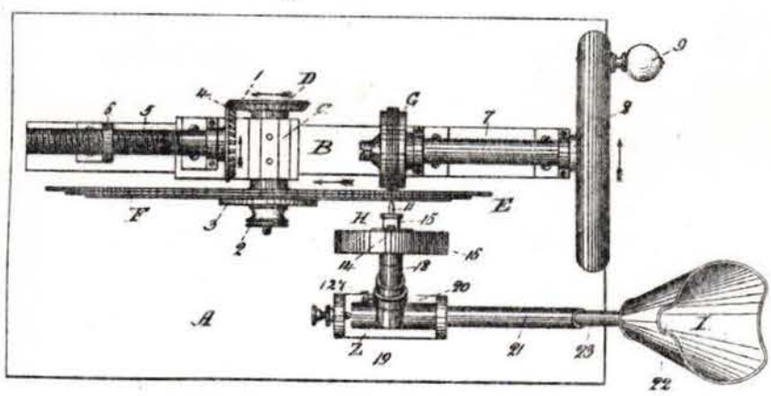


Fig. 3.

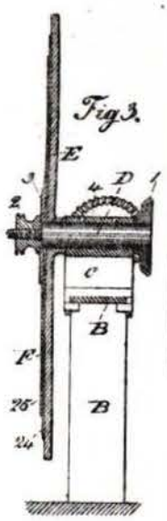


Fig. 2.

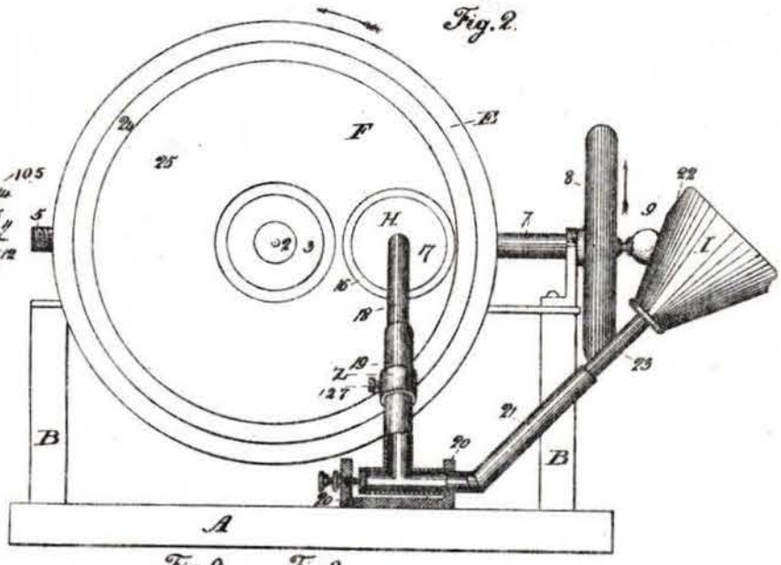


Fig. 4.

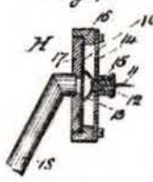


Fig. 5.

Fig. 6.

Fig. 9.

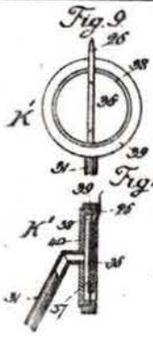
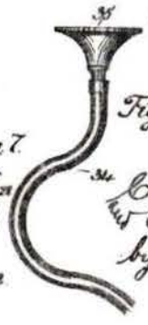


Fig. 8.

Fig. 10.

Fig. 7.

Fig. 11.



Witnesses.
Wm. Hutton, Jun.
C. J. Hedrick

Inventors.
Chichester A. Bell
Sumner Tainter
by A. Bell & Co
their attorney

just as they had been doing before being sued and enjoined, and that they were even installing additional duplicating machines.

[illegible] stated said Wolcutt as to the use he intended to [illegible]

UNITED STATES PATENT OFFICE.

CHICHESTER A. BELL AND SUMNER TAINTER, OF WASHINGTON, D. C.

RECORDING AND REPRODUCING SPEECH AND OTHER SOUNDS.

SPECIFICATION forming part of Letters Patent No. 341,214, dated May 4, 1886.

Application filed June 27, 1885. Serial No. 170,044. (No model.)

To all whom it may concern:

Be it known that we, CHICHESTER A. BELL and SUMNER TAINTER, both of Washington, in the District of Columbia, have invented a new and useful Improvement in Recording and Reproducing Speech and other Sounds, which improvement is fully set forth in the following specification.

This invention relates to the formation, in a solid substance, of elevations and depressions, or other inequalities corresponding more or less perfectly to the forms of sound-vibrations, and the reproduction, by means of such inequalities, of the sounds represented by them.

The invention consists, first, in the formation of the record or "phonogram," as it has been called, by means of a cutting-style which is vibrated by the sound-waves or sonorous vibrations to be recorded. The vibrations may be impressed upon the style directly by the impact of the sound-waves upon some device mechanically connected with or carried by the cutting-style or its support, or indirectly through the action of an electric current or other suitable vibratory medium. Heretofore a large number of contrivances have been devised for converting electrical impulses into mechanical vibrations, and they could, of course, be used for vibrating the cutting-style. Otherwise they have no relation to this part of the present invention, the essential new feature of which is the removal of material to form the record by a cutting, gouging, or graving action of the vibrating style. Heretofore the vibrating style has, as in Edison's well-known phonograph, simply indented the recording material. It has been proposed to cut the record in the edge of a strip of metal or other solid material by vibrating the strip in contact with the cutting edge of a rotary disk-cutter; but this proposal is essentially different from this invention, the new mode being applicable to cutting the record upon all sorts of surfaces, and not upon strips only, and is, besides, believed to be later in time than this invention. Under this part of the invention are included the vibratory cutting-style as a new device in a sound-recorder, and the combination of the same with other devices; also the cut or engraved record itself. In this new or improved form of record not only may a larger number of words or sounds be recorded in a given surface than has been practicable with the indented records heretofore in use, but the recorded vibrations are also sharper and better defined. It is found that an indenting style smooths over the crests of the larger elevations, and also rubs out some of the finer ones.

The invention consists, secondly, in engraving or cutting the record in a waxy or amorphous and slightly cohesive substance. Preferably, a compound of beeswax and parafinic (the latter in excess) is employed. This compound has no tendency to clog the style, but is readily removed thereby in chips or shavings. This part of the invention also consists in a recording material composed of a wax or waxy surface on a paper or pasteboard foundation. Heretofore it has been proposed to use soft paper saturated or coated with parraffine as the material for recording by the indenting method; but its use does not appear to have been successful, and an outer layer of tin-foil was therefore employed to receive the indentations.

The invention consists, thirdly, in cutting or engraving the record in the form of a groove with sloping walls, the sound-waves being represented by elevations and depressions at the bottom of the groove or otherwise. The advantage of this form of record is that it forms an efficient guide to the reproducing-style.

The invention consists, fourthly, in loosely mounting the reproducing-style so that it can readily be guided by the record. Preferably the reproducing-style, or rather what may be called the "head" of the reproducing-instrument, is mounted on a universal joint, and the style is pressed against the record by the yielding pressure of a spring or weight. Practically in the instruments made by us the pressure is due to the weight of the instrument, modified by the elasticity of a section of soft-rubber tube, which supports the same and constitutes a universal joint; but evidently there are many devices which can be used to mount the reproducer, so that it is free to follow the sound record or phonogram, and which, therefore, would be within the spirit of the invention. The reproducing-style, mounted as just explained, is specially adapted for use in connection with a record in the form of a groove with sloping walls, and this

just as they had been doing before being sued and enjoined, and

combination is specially claimed; but it may also be usefully employed in connection with other forms of record.

The invention consists, fifthly, in reproducing directly from the wax record. It is found that such a record has sufficient strength to withstand the rubbing action of the reproducing-style, so that a considerable number of reproductions can be obtained from it. The smoothness of the wax gives it a great advantage in this regard. So far as we are aware, no one has reproduced sounds from a wax record by rubbing a style or reproducer over it.

The invention consists, sixthly, in a reproducer or reproducing-instrument in which the reproducing-style, instead of being placed behind its support, projects at the point beyond the edge thereof. One practical advantage of this is that it enables the position of the style on the record or phonogram readily to be observed.

The invention consists, seventhly, in cutting the sound-record in a fusible material, (the waxy compound before referred to, for example,) and then melting the surface slightly, so as to remove any roughness left by the cutting-style. These roughnesses are altogether outside of the sound-vibrations, and give rise in reproducing to scraping noises, which interfere with the intelligibility of the sounds reproduced. These scraping noises are greater with some other modes of reproducing which we have devised, and which will form the subject of other patents, than they are with a rubbing style; but even with the latter the additional smoothness given to the surface by the partial fusion has some advantage.

The invention consists, eighthly, in a sound-recorder having a cutting or graving style which is held by elastic or yielding pressure against the surface on which the record is to be made. The object is to enable the vibratory graver or cutting style to ride over instead of plowing through any elevations on the recording-surface. The depth to which the point of the cutting-style is embedded in the record affects the amplitude of the style's vibration. By this improvement the depth is kept uniform, notwithstanding any slight unevenness of the recording-surface.

The invention consists, ninthly, in having the recorder, of whatever description, or the reproducer, or both, rest against the tablet or recording material by gravity.

The invention consists, tenthly, in combining with a sound-recorder or recording-instrument of any suitable description, and specially with one having a cutting-style, a tube or hollow standard on which the recorder is mounted, and through which the sound-waves are conveyed to the same. This part of the invention also consists in supporting this hollow standard on a hinge, and having a sound-conveying tube communicate with the interior thereof through the hinge. This part of the invention further consists in supporting the reproducer or reproducing-instrument on a hollow sound-conveying standard, the same as explained with respect to the recorder, and in similarly connecting the hollow standard of the reproducer with an exterior sound-conveying tube.

The invention consists, eleventhly, in combining with the recorder a mouth-piece so shaped as to include the nose of the user. It is found desirable to concentrate the sound-waves as much as possible upon the recording instrument or style, and if an ordinary mouth-piece be used the sound reproduced from the record is imperfect in the nasal elements, and sounds somewhat like the speech of a person with a cold in his head. By the use of the improved mouth-piece this disagreeable quality of the reproduced sound is avoided.

The invention consists, twelfthly, in a reproducer in which the sonorous vibrations impressed by the record upon the style are by the latter communicated to a block, plate, or other body of hard rubber, and through said body are transmitted to the air or to other vibratory medium. It is found that this material (hard rubber) gives much purer sounds than metal and other substances heretofore employed. It appears to absorb minute vibrations which give rise to scratching noises, and also to communicate sonorous vibrations without at the same time adding any foreign vibrations due to the movements of its own particles among themselves. The result is probably due to the high elasticity and the homogeneity of hard rubber.

The invention consists, thirteenthly, in combining with the disk of a recording and reproducing apparatus, in which the record is formed on the face of said disk in a volute or spiral by cutting or otherwise by any known or suitable means mechanism for giving to said disk a uniform surface-speed under the recorder. Heretofore when the record was formed on the face of a disk the latter has been given a uniform rotation, so that the same number of words were recorded in the outermost circles as in the smaller inner ones. By giving to the disk a uniform surface-speed under the recorder, or by making the times of each rotation inversely proportional to the distance of the recorder from the center of the disk, the record of any given word or sound will be of the same length at whatever part of the disk it may be, and in this way it is possible considerably to increase the number of words or sounds on a given area.

The invention further comprises certain special instructions, combinations, and arrangement of parts, as hereinafter set forth.

Having now explained the principle of the invention, the manner in which the same is or may be applied will now be explained with reference to the accompanying drawings, which make part of this specification.

Figure 1 is a plan view of an apparatus constructed in accordance with the invention, arranged for recording; Figs. 2 and 3, respectively, a front elevation and cross-section of

the same; Fig. 4, a view in section and elevation of the recorder; Figs. 5 and 6, views on an enlarged scale of the graver or cutting style; Figs. 7 and 8, views in elevation and section, respectively, of the reproducer; Figs. 9 and 10, similar views of another form of reproducer, and Fig. 11 an elevation of the sound-conveying tube for use with the reproducer. Figs. 12 to 17 represent a modified form of apparatus, Fig. 12 being a back view, partly in section; Fig. 13, a plan, partly in section; Fig. 14, an edge view, partly in section; Figs. 15 and 16, views in elevation and section of the recorder, and Fig. 17 an edge view of a friction-clamp making part of the apparatus. Figs. 18 and 19 are plan and longitudinal sections, respectively, of a form of apparatus also constructed in accordance with the invention, or with parts thereof in which the record is made on a strip, and Fig. 20 is a partly in section, of the reproducer [illegible] with such wire by turning the end conical and rounding the extremity, and then grinding off one side to the axis of the wire. This leaves sharp cutting-edges on both sides of the tapering point. These edges remove the material in chips or shavings, like a plane or turning-tool. It is not essential to give this form to the style. Any form which will remove the material and not simply displace it will answer. The style is set in one end of a block, 12, provided on the opposite end with a cap, 13, (see Fig. 4,) and secured in the cross-piece 14 by the nut 15. The cross-piece 14 is fastened to a ring, 16, into which a back plate, 17, is secured. These parts, except the steel style, are preferably of hard rubber, although they could be made of another material—of brass, for example. A sound-conveying tube, 18, is screwed into the back plate, 17, the end being just behind the cap 13. A diaphragm, 105, of any suitable material, whose edges are clamped be-

the same; Fig. 4, a view in section and elevation of the recorder; Figs. 5 and 6, views on an enlarged scale of the graver or cutting style; Figs. 7 and 8, views in elevation and section, respectively, of the reproducer; Figs. 9 and 10, similar views of another form of reproducer, and Fig. 11 an elevation of the sound-conveying tube for use with the reproducer. Figs. 12 to 17 represent a modified form of apparatus, Fig. 12 being a back view, partly in section; Fig. 13, a plan, partly in section; Fig. 14, an edge view, partly in section; Figs. 15 and 16, views in elevation and section of the recorder, and Fig. 17 an edge view of a friction-clamp making part of the apparatus. Figs. 18 and 19 are plan and longitudinal sections, respectively, of a form of apparatus also constructed in accordance with the invention, or with parts thereof in which the record is made on a strip, and Fig. 20 a plan, partly in section, of the reproducer for use with such apparatus. Fig. 21 is a view of a recorder in which the style is operated electrically.

Referring to Figs. 1 to 11, A is the base or bed of the apparatus, and B an upright frame, which carries the mechanism for supporting and moving the tablet F, (shown as a disk,) on which the record is to be or has been formed. In the slide C, movable in ways of the frame B, is journaled an arbor, D, on which are fixed a metal disk, E, at one end and a bevel-gear, 1, at the other. The arbor projects beyond the metal disk E, so as to form a support for the recording-tablet F, which is retained thereon by the nut 2 and washer 3. The metal disk E performs the double function of a friction-wheel and of a backing to the recording-tablet F. The bevel-gear 1 engages a similar gear, 4, on the end of the screw 5, which is journaled in a bearing in the slide C, and is tapped through a stationary lug, 6, on the frame B. As the arbor D is revolved, the screw 5 is turned also, and in consequence of its engagement with the lug 6 it moves the slide C lengthwise of the frame B. The rotation is communicated to the arbor from the shaft 7, journaled in bearings of the frame B, and provided at one end with a fly-wheel, 8, and crank-handle 9, and at the other with a friction-pinion, G. This pinion is formed, as shown, of rubber disks clamped together between metal washers. It bears against the back of metal disk E, and communicates motion to it. As the slide C is moved by the action of the screw 5, the metal disk E is carried past the friction-pinion, so that it touches the metal disk in a spiral line, and serves to give a uniform surface-speed to each part of the disk as it in turn comes opposite said pinion. The recorder H is placed on the opposite side of the metal disk E, preferably as shown, with the point of the graver or cutting style 11 directly opposite the point where the pinion G touches the disk E. The said pinion thus acts as a support to the disk against the action of the cutting or recording style. The latter is preferably formed of a round wire by turning the end conical and rounding the extremity, and then grinding off one side to the axis of the wire. This leaves sharp cutting-edges on both sides of the tapering point. These edges remove the material in chips or shavings, like a plane or turning-tool. It is not essential to give this form to the style. Any form which will remove the material and not simply displace it will answer. The style is set in one end of a block, 12, provided on the opposite end with a cup, 13, (see Fig. 4,) and secured in the cross-piece 14 by the nut 15. The cross-piece 14 is fastened to a ring, 16, into which a back plate, 17, is secured. These parts, except the steel style, are preferably of hard rubber, although they could be made of another material—of brass, for example. A sound-conveying tube, 18, is screwed into the back plate, 17, the end being just behind the cup 13. A diaphragm, 105, of any suitable material, whose edges are clamped between the ring 16 and back plate, 17, is placed behind the cup 13, which is pressed against said diaphragm by the elasticity of cross-piece 14. The cup 13 and block 12 serve to communicate the vibrations from the diaphragm to the recording-style.

The tube 18 forms part of a hollow standard, upon which the recorder is mounted. The lower part, 19, of this standard is hinged in the bracket 20, as clearly shown in Fig. 2, so that it can be rocked to bring the recorder into or put it out of action.

On the tube or standard 19 is a ring-weight, Z, which is retained in position by a set-screw, 127. It therefore can be adjusted up or down, in order to increase or diminish the pressure of the style 11 against the tablet F. The use of this weight is desirable, but not necessary.

The tube 21 communicates with the interior of the hollow standard through the hinge, and does not therefore interfere with its freedom of motion. This tube 21 can be fixed in the bracket or can be allowed to turn, as may be preferred.

The mouth-piece I is shaped to fit the face of the user, and is provided with a notch, 22, to receive the nose. It is attached to the tube 23, which at its lower end fits snugly in the tube 21 and communicates through the series of tubes 23, 21, 19, and 18 with the space inside and back of the cup 13.

In operation the recorder rests by its own weight, assisted by the pressure of weight Z, or by its own weight alone, if preferred, against the recording-tablet F, said weight causing the style to embed itself to the proper extent in the recording material. The sonorous vibrations impressed upon the style are so rapid, as well as so minute, that the record is made as perfectly as if the recorder were held positively, while at the same time the recorder can be moved bodily to conform to the unevenness of the surface of the tablet, and thus keep uniform the depth at which the style operates.

The tablet F consists of a paper or pasteboard foundation, 24, with a coating, 25, of

just as they had been doing before being sued and enjoined, and

wax. A composition excellently adapted to the purpose, and according to our experience the best, consists of one part, by weight, of white beeswax and two parts of paraffine. The two bodies are melted together, and if not perfectly free from dirt and grit should be filtered. A filtration through cotton-wool will answer. The coating is or may be about one-twentieth of an inch in thickness, (the paper being one-tenth of an inch, more or less,) and can be made by flowing the melted composition over the paper disk or foundation. The surface is preferably turned off flat on a lathe.

In order to place the tablet in the machine, the recorder H is turned back out of the way. When the tablet has been secured in place, the recorder is turned forward into the position shown, the style resting against and slightly penetrating the wax coating. A penetration of one one-hundredth of an inch has been found very effective, the style being formed of No. 16 wire shaped at the cutting end as in Figs. 5 and 6. Upon turning the fly-wheel 8 the disk E and tablet F will be turned, and the style 11 will cut or engrave a spiral line in the wax coating of the tablet. If one talks into the mouth-piece I, the style will be thrown into vibrations corresponding to the spoken words, and the engraved line will be of varying character, the inequalities or variations from uniformity representing the forms of the sound-waves.

The reproducer K, (shown in Figs. 7 and 8,) for reproducing from the engraved tablet or from other suitable record the sounds which formed said records, has a reproducing-style, 26, formed of a narrow metal strip bent near the end, as shown in Fig. 8, and pointed, as shown in Fig. 7. This style is held by cementing, riveting, or otherwise, between the strip 27 and the circular plate 28, both preferably of hard rubber. The strip 27 is fastened at the bottom to an offset on the block 29, in which a passage is formed for the sound-waves. This passage terminates just behind the plate 28. There is a fixed disk, 30, of the same size as the movable plate 28. It is cemented or otherwise fastened on the face of the block, and is perforated at the center, in order not to obstruct the opening therein. The plate 28 is close to but not in contact with the disk. The tube 31, fixed at the upper end to the block 29, is joined at the lower end to the tube 33 by a section of soft flexible vulcanized-rubber tubing, 32. For use the tube 33 is slipped into the tube 19 in the manner shown for the tube 18 of the recorder.

The reproducer K when so placed is mounted upon a hollow standard composed of the tubes or tubing 31, 32, 33, and 19, and in consequence of the flexibility of the rubber tubing 32 it is free to follow the record. No special care is necessary to insure its adjustment, for if the reproducer K be allowed to rest against the record with the style upon the engraved line the style will of itself gravitate to the bottom of the groove.

There exists always a liability to disarrangement in some part of the machine either in the recorder or the support therefor or the recording-tablet or its support, or if there be no disarrangement it would be difficult to insure that the reproducing-style should touch the record precisely at the proper point if the reproducer be held rigidly. Difficulties on these accounts are avoided by the loose or flexible mounting of the reproducer, the style automatically adjusting itself to the proper place on the record. It will be seen that the reproducer is mounted on a universal joint, so that it can move in any direction. The movement parallel with the face of the tablet would, however, by itself allow the style to follow and adjust itself to the record to a useful extent.

In operation the reproducer K is placed against the record, and on turning the wheel 8 in the same direction and at about the same speed that it was turned in recording, the record will move the style 26 and plate 28, so as to throw the air in the hollow standard into vibrations, and produce sound-waves similar to those which originally acted upon the recording-style to make the record. The reproduced sounds are audible by placing the ear in proximity to the mouth-piece I; but it is preferred to withdraw said mouth-piece, and to connect the flexible tube 34 (see Fig. 11) with the tube 21 and listen at the ear-piece 35. After the record has been cut it will of course be understood that the machine is turned back to the starting-point for reproducing. The surface of the cut record can be rendered more smooth by removing the engraved tablet from the machine and exposing the surface to heat—as, for example, by rotating the tablet face downward over an alcohol-lamp until the surface begins to glisten. Of course a too long exposure would destroy the record. It is the merest surface action that is required. The record can be used for reproducing without submitting it to this operation and without removing it from the machine. It may, however, be removed, and at any time thereafter replaced on the same or a similar machine, and be made to reproduce the original sounds.

The reproducer K′ (shown in Figs. 9 and 10) has the style 26 attached to the outer of two light plates, 36 and 37, which are attached to a diaphragm, 38, of thin sheet rubber clamped at the edges between the ring 39 and the border of the back plate, 40. The tube 31 is fastened in the back plate.

It will be observed that in both forms of reproducer the style 26 projects beyond the edge or end of the instrument, so that the position of its point on the record can be easily seen.

Referring now to Figs. 12 to 17, A is the bed, B an upright frame, D an arbor, E a metal disk, F the tablet, and G a friction-pinion, as in Figs. 1 to 11. The nut 2 and washer 3, the shaft 7, wheel 8, and crank 9, and the paper disk 24 and wax coating 25 are identical with the parts similarly numbered in Figs. 1,

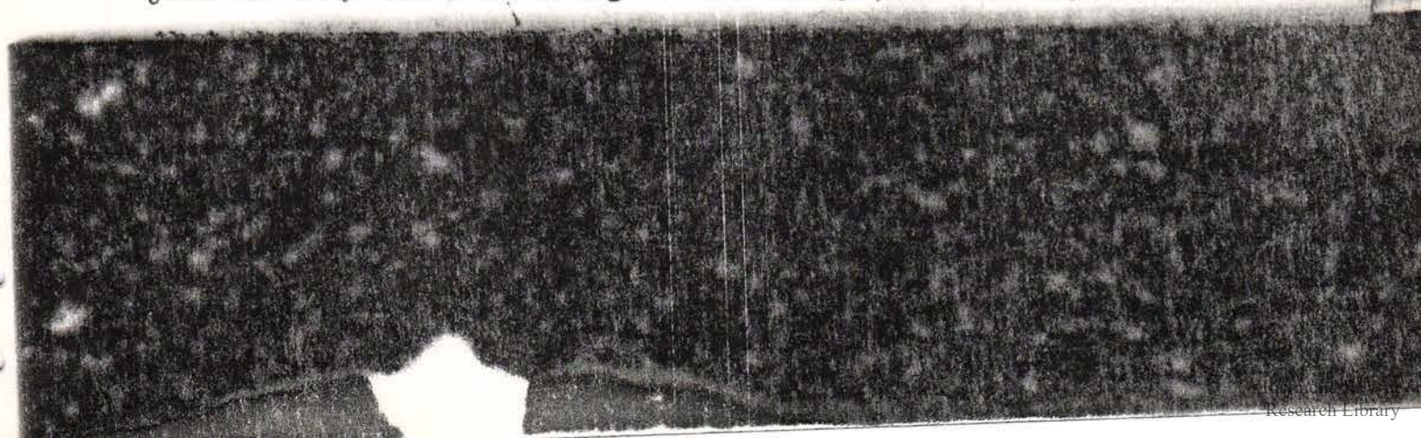
2, and 3. The arbor D, instead of being journaled in a slide, is carried by an arm, L, which is supported by and is fixed on the short shaft 50. This shaft is supported on centers 51 and 52, so that the arm L can be rocked. The worm-wheel 53, loosely mounted on the shaft 50, is held stationary by the clamp M, the jaws 54 fitting on either side of the wheel, and being pressed against it by the thumb-screw 55. The arbor D carries a screw-wheel, 56, which engages the worm-pinion 57 at the upper end of shaft 58. The screw 59 at the lower end of the shaft engages the worm-wheel 53. This shaft 58 and the gears 57 and 59 carried thereby prevent the arm L being turned independently of the worm-wheel 53, except as the said shaft is rotated. As the arbor D, disk E, and tablet F are rotated, the screw 56 turns the shaft 58, and consequently—the worm-wheel 53 being held stationary by the clamp M—the arm L is swung gradually to one side, so that the recorder engraves a spiral line on the wax face of the tablet. When the record has been cut, it is only necessary, in order to restore the tablet to the starting-point for reproducing, to draw back the recorder and to loosen clamp M, when arm L can be moved at once to the proper position.

A recorder constructed and mounted precisely as in Figs. 1, 2, 3, and 4 could be used in this machine; but, as shown, the recording-instrument H′ is modified to some extent. The cutting-style 11 (which is the same as that of Figs. 4 to 6) is set into a block, 60, carried by a metal strip, 61. This is fastened to a block, 62, at the lower end of a back piece, 63, which is attached to the upper end of the tube 64, which forms the hollow standard for the recorder, and which is mounted on the bracket 65, so as to be capable of being turned to put the record into or out of action. The sound-conveying tube 66 corresponding to tube 21 of Figs. 1 and 2 communicates through the hinge with the interior of the tube 64. In front of the opening at the upper end of tube 64 is stretched a diaphragm, 67, of thin sheet metal, or it may be of other membrane or material, its edges being clamped between the ring 68 and back piece, 63, soft-rubber rings 69 and 70 being interposed one on each side of the diaphragm. On the opposite side of the diaphragm 67 from the tube 64 a light plate, 71, of metal cupped in the center, is held against the diaphragm by the pressure of the strip 61, a projection on the back of said strip bearing against the said plate 71.

In this machine the reproducer K, instead of being mounted on the same bracket as the recorder when the latter has been removed, is carried by a separate bracket, 72, the tube 33 being hinged thereto, so that the recorder and reproducer remain, or may remain, always attached to the machine, it only being necessary to turn one or the other into position, as may be required.

Referring to Figs. 18 to 20, A is the base or bed, B an upright frame, 7 the driving-shaft, 8 the fly-wheel, 9 the operating-crank handle, and G the friction-pinion, as in Figs. 1 and 2. The arbor P is supported in an upright position in bearings of the frame A B, and is revolved by the friction-pinion G engaging the friction-disk Q. The record is made on a wax-coated strip, R, of paper, which is passed around the periphery of the disk S in the groove formed thereon. As the strip passes in front of the recorder or reproducer, it is wound off one reel—say the reel T—and upon the other reel, U. The strip can be wound back upon the reel T when desired. Each reel rests by its own weight upon a platform or flange, 75, at the upper end of a hollow shaft, 76, which turns upon a stud, 77, fastened at the base to the bed B. A pin, 78, passes through the center of the reel, and forms a journal for it to turn upon. A nut, 79, holds the reel on, and may be used to bind it with more or less tension. On each shaft 76 is a belt-pulley, 80 and 81, respectively, driven by a crossed belt, 82 or 83, from a pulley, 84 and 85, on the arbor P. These pulleys 84 and 85 are loose upon the arbor, but are provided each with a clutch, 86 and 87, so placed (see Fig. 18) that when the arbor is turned to the left the clutch 87 engages the hub 89 on the arbor, and the pulley 85 is turned therewith, while when turned to the right the clutch 86 engages the hub 88. Each shaft 76 has a stop-clutch, 90 and 91, respectively, which holds it stationary when the strip is being wound on the other reel. Thus, when the arbor P is turned to the left the reel U is revolved in the direction indicated by the arrow, and the sleeve-supporting reel T is held stationary. The strip is thus stretched at all times, the degree of tension depending upon the friction between the reels and their supporting-flanges 75. The recorder H″ is carried by a cross-piece, 92, supported by posts 93. The style 11 is carried by a cross-piece, 94, to which it is attached by means of the cup 95, of hard rubber, which forms a nut on the screw-threaded shank of the style, and said cup rests against a mica diaphragm, 96, whose edges are clamped between the screw-ring 97 and the back plate, 98. The tube 18, screwed into the back plate, is fastened by soldering or otherwise to the cross-piece 92. The tube 23 of the mouth-piece I fits into said tube 18. The ends of the cross-piece 92 are slotted to fit around the screws at the top of posts 93 and rest upon nuts 99, and are clamped by nuts 100. By means of these nuts the vertical position of the recorder can be adjusted. After one line has been engraved on the strip, the recorder can be adjusted to engrave as many additional lines parallel thereto as the strip will receive. The slots in the cross-piece 92 allow the recorder to be moved toward and away from the strip, so as to regulate the depth of the engraved line. To insure a greater nicety of adjustment, screws 101 are

just as they had been doing before being sued and enjoined, and



tapped through the metal at the closed end of the slots, and bear at the point against the supporting-screws.

The reproducer K′, Fig. 20, is similar to that shown in Figs. 9 and 10, except that the style 26 is so placed that the point is at the center instead of projecting beyond the edge of the instrument. Its position on the record is therefore not so readily seen; but with the form of machine shown in these figures this is less important. The same may be said of the loose mounting of the reproducer, although in point of fact the thin rubber diaphragm 38 gives a certain lateral play to the style. The tube 31 is rigidly fastened to a cross-piece, 102, identical with the cross-piece 92, and with said tube 31 the bearing-tube 30 and ear-piece 35 are connected.

The paper strip can be easily coated with the beeswax and paraffine compound by running the same through a body of melted composition and scraping one side, leaving what adheres to the other to harden thereon.

In Fig. 21 an arrangement for operating the recorder by electro-magnetism is shown. The magnet 107 is mounted on a bar, 108, journaled in bearings in standards 109. It is provided with a bobbin, 106, of wire, surrounding the pole-piece, which bobbin is included in a circuit over which electrical undulations are caused to pass by any suitable transmitting-instrument—for example, such as commonly employed on telephone-lines. In front of the pole-piece or core of the bobbin is a diaphragm, 105, of magnetic material, whose edges are clamped between the ring 16 and back plate 17. The cup 13 should always be in contact with diaphragm 105, and is pressed against it by the spring of piece 14. This cup, as well as the style 11, block 12, nut 15, and cross-piece 14, is the same as in the recorder H of Figs. 1 and 4.

It is evident that various modifications other than those indicated can be made and the invention still be employed in whole or in part, and also that parts of the invention may be used separately.

In the foregoing description details have been given with some minuteness. This has been done to furnish the best information in our power for enabling those skilled in the art to make and use the invention, and not with the intention of limiting the invention to the precise dimensions, proportions, shapes, and materials stated.

A means has been shown for impressing vibrations upon the recording-style by an electrical current through the intermediary of an electro-magnet, in a manner similar to that in which the diaphragm of an ordinary receiving-telephone has been vibrated.

It is evident that other means heretofore used for vibrating a diaphragm could be used in place of the magnet; also, it is evident that the vibrations of the reproducing-style could be taken up and transmitted by the means heretofore used for taking up and transmitting vibrations, (those of a telephone-diaphragm, for example.)

The term "cutting" is herein employed to indicate an action in which the material is removed in chips, shavings, or other small pieces—as in engraving, turning, and the like—and not simply displaced.

The displacement of the material is not only a different operation from the cutting contemplated by this invention, but is not calculated to accomplish the objects for which cutting or graving is employed.

Having now fully described our said invention and the manner in which the same is or may be carried into effect, what we claim is—

1. The method of forming a record of sounds by impressing sonorous vibrations upon a style, and thereby cutting in a solid body the record corresponding in form to the sound-waves, in contradistinction to the formation of sound-records by indenting a foil with a vibratory style, or cutting a strip by vibrating it against a revolving disk-cutter, substantially as described.

2. The method of forming a sound-record by impressing the sonorous vibrations upon a style in a direction at right angles to the recording-surface, and thereby cutting in a solid body a series of elevations and depressions of varying depth, corresponding in form to the sound-waves, substantially as described.

3. The vibratory cutting-style of a sound-recorder, substantially as described.

4. The cutting-style, in combination with a support permitting the same to be vibrated, and means for impressing sonorous vibrations thereon, substantially as described.

5. A vibratory cutting-style, in combination with a sound-conveying tube for concentrating the sound-waves upon the style, substantially as described.

6. A vibratory cutting-style, in combination with a tablet or other solid body in which the record is to be cut, and mechanism for supporting the same and moving it with reference to the said style, substantially as described.

7. A sound-record consisting of a tablet or other solid body having its surface cut or engraved with narrow lines of irregular or varied form corresponding to sound-waves, substantially as described.

8. A sound-record consisting of a tablet or solid body having its surface cut or engraved with a number of lines of variable cross-section, the irregularities or variations corresponding in form to sound-waves, substantially as described.

9. The method of forming a sound or speech record which consists in engraving or cutting the same in wax, or a wax-like composition, substantially as described.

10. The sound or speech record cut or engraved in wax or a wax-like composition, substantially as described.

11. The recording-tablet of a phonograph or sound-recording machine, having as the material for recording sounds or sonorous vibra-

tions the composition of beeswax and paraffine, substantially as described.

12. The sound or speech record cut or engraved in a wax-like composition, such as the compound of beeswax and paraffine, substantially as described.

13. A tablet or body for recording sound-vibrations, consisting of a paper or pasteboard foundation and a surface-coating of beeswax and paraffine compound, substantially as described.

14. The sound or speech record cut or engraved in a wax-like composition, such as the described compound of beeswax and paraffine, constituting a surface-coating to a paper or pasteboard foundation, substantially as described.

15. The method of making a sound or speech record which consists in engraving or cutting in the recording material an irregular groove with sloping walls, the shape of the groove representing the sound-vibrations, substantially as described.

16. The method of making a sound or speech record which consists in cutting in the recording material a groove with sloping walls and of variable cross-section, the variations corresponding in form to sound-waves, substantially as described.

17. The sound-record in the form of an irregular groove with sloping walls cut in solid material, substantially as described.

18. The sound-record cut in wax or wax-like composition in the form of an irregular groove with sloping walls, substantially as described.

19. The combination, with a reproducing-style, of a mounting therefor, which leaves said style-face to move laterally, and thereby adjust itself automatically to a sound-record, substantially as described.

20. The reproducer loosely mounted on a suitable support, so that the reproducing-style is capable of a lateral movement, and may in consequence thereof adjust itself automatically on the record, substantially as described.

21. The reproducer mounted on a universal joint and held against the record by yielding pressure, substantially as described.

22. The combination, with a grooved tablet or other body having a sound-record formed therein, of a reproducer having a rubbing-style loosely mounted, so that it is free to move laterally, and thus adjust itself to the groove, substantially as described.

23. The combination, with the tablet or other body having the sound record formed therein as an irregular groove with sloping walls, of a reproducer having a style for rubbing over said record and mounted on a universal joint, substantially as described.

24. The combination, with a sound-record formed in wax or a wax-like material, of a reproducer having a rubbing style for receiving sonorous vibrations from said record, substantially as described.

25. A reproducer having a style projecting beyond the edge or end of the instrument, so that the position of the point of the style on the record may readily be seen, substantially as described.

26. In a reproducer, the combination, with a vibratory plate or diaphragm, of a reproducing-style fastened flatwise on said plate or diaphragm and bent at the end, substantially as described.

27. The method of recording and reproducing sounds by cutting the record in a wax or wax-like material, and then rubbing over the record the style of a suitable reproducing-instrument, so as to impress sonorous vibrations on said style, substantially as described.

28. The method of improving a sound-record which consists in producing an incipient fusion of the surface, substantially as described.

29. The improvement in preparing a sound-record, consisting in cutting the record in a fusible material, and then producing an incipient fusion of the surface, substantially as described.

30. The sound-recorder having a vibratory cutting-style held against the recording material by yielding pressure, substantially as described.

31. The recording instrument having a vibratory cutting-style and mounted on a hinged arm, substantially as described.

32. The combination, with the tablet or body in which the sound-record is to be made, of the recording-instrument mounted on a hinged arm and resting by gravity against the tablet, substantially as described.

33. The recorder mounted on a hollow arm or standard, which constitutes also a sound-conveyer, substantially as described.

34. The recorder mounted upon an arm or standard hinged to its bracket or base, and provided with a sound-conveyer extending lengthwise of said arm, substantially as described.

35. The recorder mounted upon a hinged arm, and combined with a sound-conveyer which extends lengthwise of the arm, and is connected at the hinge with an exterior sound-conveyer, substantially as described.

36. The reproducer mounted upon a hollow standard which forms a sound-conveyer, substantially as described.

37. The reproducer mounted on a hinged arm, and provided with a sound-conveyer extending lengthwise of said arm, substantially as described.

38. The reproducer mounted on a hinged arm, and provided with a sound-conveyer extending lengthwise of said arm, and connected at the hinge with an exterior sound-conveyer, substantially as described.

39. The combination, with a sound-recorder, of a mouth-piece shaped to surround the mouth and nose of the user, and to concentrate the sound upon the recording devices, substantially as described.

40. The combination, with the tablet, in the

just as they had been doing before being sued and enjoined, and that they were even installing additional duplicating machines. I therefore interrogated said Walcutt as to the use he intended to make of the blank tablets, whether they were for use with graph-

(No Model.)

L. F. DOUGLASS.

METHOD OF AND MEANS FOR DUPLICATING OR TRANSFERRING PHONOGRAPHIC RECORDS.

No. 475,490. Patented May 24, 1892.

form of a disk, and a recorder or reproducer, of mechanism for causing a spiral line to be traced on the disk by the recorder or reproducer at a uniform surface-speed, substantially as described.

41. The combination, with the tablet, in the form of a disk, the arbor, and the metal disk operating as a friction-wheel, of the slide, or its equivalent, such as herein shown, in which said arbor is journaled, and the friction-pinion for revolving said disk, substantially as described.

42. The combination, with the recorder or the reproducer, the disk, the arbor, and the laterally-movable support to the arbor, of the friction-pinion placed behind and bearing against the disk at a point opposite the recorder or reproducer, substantially as described.

43. The combination, with a recording-style and the support therefor, of a cup on the back of said support, and the sound-conveying tube terminating just behind the cup, substantially as described.

44. In combination with the style of a sound-reproducer, a vibratory body or plate of hard rubber, upon which vibrations are impressed by said style, and through which they are transmitted, substantially as described.

45. A tablet provided with a wax or wax-like coating, and having engraved in said coating a spiral line with inequalities or irregularities corresponding in form to sound-waves, substantially as described.

46. A tablet provided with a coating of wax or wax-like composition, and having a sound-record engraved in said coating, said engraved coating having the glazed surface which results from an incipient fusion of the wax after cutting or engraving the record, substantially as described.

47. In combination with a sound-recorder, a flaring mouth-piece shaped to fit over the face of the user and to include his nose, and communicating through a tube or contracted opening with the space behind the diaphragm of said recorder, substantially as described.

In testimony whereof we have signed this specification in presence of two subscribing witnesses.

CHICHESTER A. BELL.
SUMNER TAINTER.

Witnesses:
PHILIP MAURO,
C. J. HEDRICK.

(No Model.)

L. F. DOUGLASS.

METHOD OF AND MEANS FOR DUPLICATING OR TRANSFERRING PHONOGRAPHIC RECORDS.

No. 475,490. Patented May 24, 1892.

Fig. 1.

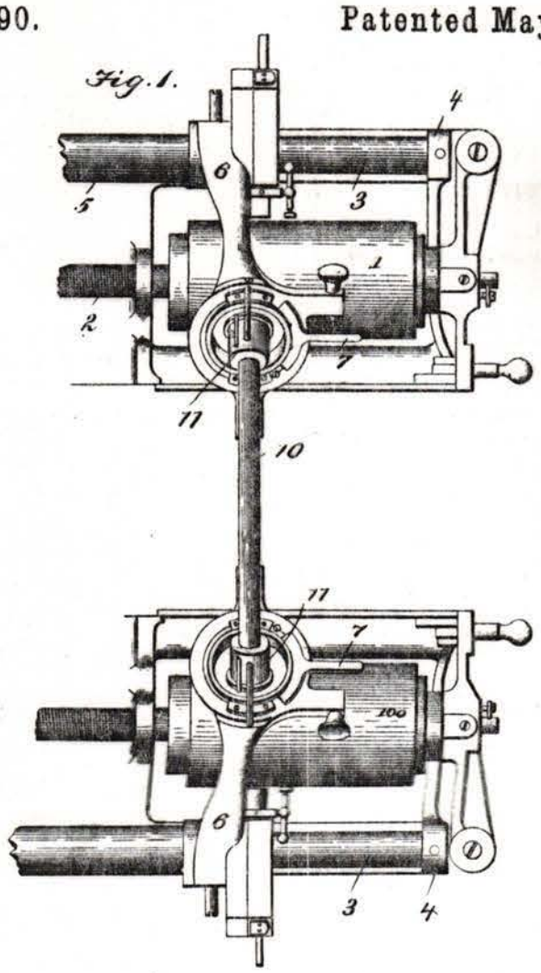
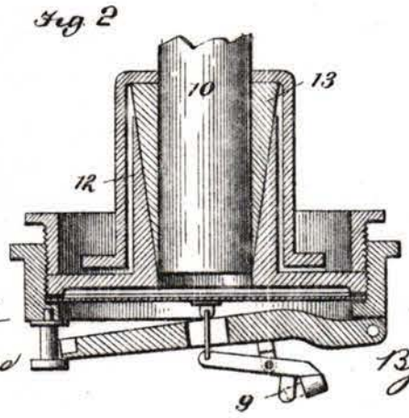


Fig 2



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By F. W. Ritter Jr.
Attorney

continuing the manufacture and sale of such duplicate sound-records just as they had been doing before being sued and enjoined, and

UNITED STATES PATENT OFFICE.

LEON F. DOUGLASS, OF WASHINGTON, DISTRICT OF COLUMBIA, ASSIGNOR TO EDWARD D. EASTON, OF SAME PLACE.

METHOD OF AND MEANS FOR DUPLICATING OR TRANSFERRING PHONOGRAPHIC RECORDS.

SPECIFICATION forming part of Letters Patent No. 475,490, dated May 24, 1892.

Application filed March 17, 1892. Serial No. 425,259. (No model.)

To all whom it may concern:

Be it known that I, LEON F. DOUGLASS, a citizen of the United States, residing at Washington, District of Columbia, have invented certain new and useful Improvements in Methods of and Means for Duplicating or Transferring Phonographic Records; and I hereby declare the following to be a full, clear, and exact description of the same, such as will enable others skilled int he art to which it appertains to make and use the same.

My invention relates to a new and useful method of duplicating or transferring phonographic records; and it consists, generally stated, in delivering the sound-waves emitted by the reproducing-diaphragm to a receiving-diaphragm carrying the cutting-stylus, which causes said diaphragm to move successively or in the order of the force of the sound-waves and cut like forms of sound-waves upon the receiving phonogram-blank, thus making a duplicate of the record.

A second feature of the invention resides in providing means for confining and directing the sound-waves from one diaphragm to the other.

A third feature resides in delivering the sound-waves through a channel or conduit of rarefied air or air at a reduced pressure, and, finally, in the construction and arrangement of the several parts, whereby these features are obtained, all as will hereinafter be described, and afterward pointed out in the claims.

In the accompanying drawings, forming a part of this specification, like symbols of reference refer to like parts wherever they occur, in which—

Figure 1 is a plan view showing the diaphragms in position on the respective cylinders and the flexible conduit for conducting the sound-waves from one diaphragm to the other. Fig. 2 is a cross-section through one of the diaphragms, showing the air-tight connection of the conduit therewith.

In the drawings, 1 indicates the phonogram-record, mounted upon a mandrel of any ordinary or approved construction, which is turned by the screw-shaft 2 in the usual manner.

3 is the guide-rod, mounted in supports 4, upon which is mounted the sleeve 5, carrying the arm 6, which supports and carries the diaphragm or reproducer, said arm and its contained diaphragm or reproducer being moved along by a feed-arm (not shown) and which co-operates with the screw-shaft 3. The receiving-phonogram blank 100 is similarly mounted and operated by mechanism which may be connected with or be operated independently of the mechanism which operates the record-phonogram; but this I deem unimportant, as it forms no particular feature in this present invention.

The record diaphragm or reproducer is provided with an arm or extension 7, the function of which being to throw the reproducing-stylus 9 into or out of engagement with the phonogram-record cylinder. This arm or extension I also prefer to mount upon the receiving-diaphragm, in order that either or both diaphragms may be put into or out of engagement with their respective phonograms. I connect the reproducing and receiving diaphragms by a conduit or flexible pipe connection 10, said pipe extending through a thimble 11 and into a nose or extension 12 on the respective diaphragms.

13 indicates a conical-shaped flexible thimble or ferrule fitting tightly around the ends of the connecting-conduit 10 and into the noses 12 of the diaphragms, thus making an air-tight connection between the same and confining the sound-waves therein. I preferably rarefy or reduce the atmosphere in the conduit 10, in order to more readily transmit the sound-waves and make the diaphragms more susceptible to vibration on account of pressure of the outside air.

To reduce the air in the conduit, it is only necessary to compress the same before insertion, which will exclude a portion of the air therefrom, and the conduit will of its own assertion of elasticity resume its normal position.

I have illustrated in Fig. 1 the ordinary means of operation of the several phonograms; but I do not wish to be understood as confining myself to such construction, as it is obvious that any suitable mechanism may be substituted and employed to accomplish the same results without in the least departing from the nature and principle of my invention.

continuing the manufacture and sale of such duplicate sound-records just as they had been doing before being sued and enjoined, and that they were even installing additional duplicating machines. I therefore interrogated said Walcutt as to the use he intended to make of the blank tablets, whether they were for use with graph-

Having thus described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. The method herein described of duplicating or transferring phonographic records, which consists in delivering the sound-waves emitted by the reproducing-diaphragm in contact with the record-phonogram to a receiving-diaphragm, which actuates the cutting-stylus in contact with the receiving-phonogram blank, thereby making a copy of said sound-waves upon the receiving phonogram-blank, substantially as and for the purposes described.

2. The combination, with the record-phonogram, of a receiving-blank phonogram, a diaphragm for receiving vibrations from the record-phonogram, and a diaphragm for transmitting vibrations or sound-wave forms on the receiving-blank phonogram, substantially as and for the purposes described.

3. The combination, with the record-phonogram, of a diaphragm adapted to be vibrated thereby, a diaphragm adapted to be vibrated by the sound-waves emitted by the first diaphragm, and a receiving-blank phonogram for receiving the vibrations from the latter diaphragm, substantially as and for the purposes described.

4. The combination, with the record and receiving-blank phonograms, of diaphragms in juxtaposition thereto, provided with reproducing and cutting styli, and a conduit of rarefied air connecting the two diaphragms, substantially as and for the purposes described.

In testimony whereof I affix my signature, in presence of two witnesses, this 16th day of March, 1892.

LEON F. DOUGLASS.

Witnesses:
WM. A. EASTERDAY,
F. R. CORNWALL.

CIRCUIT COURT OF THE UNITED STATES FOR THE SOUTHERN DISTRICT OF NEW YORK.

American Graphophone Company, Complainant.	)	
versus	)	In Equity.
Cleveland Walcutt and Edward F.Leeds.	)	

State of New York :
:-- S.S.
County of New York. :

MERVIN E.LYLE

being duly sworn, says:

I reside in the City of New York, and am the Manager of the New York Office of the Columbia Phonograph Company, General, which is the selling agent of the machines, tablets, records and supplies manufactured by the American Graphophone Company.

I am well acquainted with Cleveland Walcutt, one of the firm of Walcutt & Leeds, defendants herein. On Thursday, February 3rd.1898, said Walcutt called at the place of business of the said Columbia Phonograph Company General, on 27th Street and Broadway, in this city, and stated that he wished to arrange for the purchase by his firm of a certain quantity of blank tablets to be supplied weekly. I had been notified by Mr.Easton, President of the American Graphophone Company, of the injunction that had issued prohibiting said firm from making, using or selling duplicate sound-records, and had also heard from various sources that said firm were continuing the manufacture and sale of such duplicate sound-records just as they had been doing before being sued and enjoined, and that they were even installing additional duplicating machines. I therefore interrogated said Walcutt as to the use he intended to make of the blank tablets, whether they were for use with graph-

ophones, or for making duplicate records. He informed me that Judge Wheeler's decree permitted his firm to continue manufacturing duplicate sound-records and that they were continuing that business. He further informed me that they had added to the number of duplicating machines which they had in use prior to the decree. He did not say in so many words that he intended to use the particular tablets he proposed buying from me for that purpose, but I deemed it proper to report the incident to Mr. Easton, which I did at once, and at the latter's request wrote to said Walcutt & Leeds to the effect that, inasmuch as they plainly intended to use the articles in violation of the order of the Court, I could not supply them therewith.

Mervin Kaye

Sworn to and subscribed before me, this 3d day of February, 1898.

Gifford Harvey
Notary Public
N. Y. Co.

UNITED STATES CIRCUIT COURT
FOR THE SOUTHERN DISTRICT
OF NEW YORK.

American Graphophone Company, Complainant. Versus Cleveland Walcutt and Edward F. Leeds, Defendants.	In Equity:

City of New York
County & State of New York ss:

Roland F. Cromelin, being duly sworn says:

I reside in the City of New York, and am Vice-President of the Columbia Phonograph Company General, the selling agent of the graphophones, sound-records, etc., manufactured by the American Graphophone Company; I have been engaged in this business for many years and am thoroughly conversant with the manufacture of sound-records, both "originals" and "duplicates". The cost of making original records (which are made on graphophones or phonographs in the well known way) is relatively high; but, by means of duplicating machines using an original record so made as a "master", duplicates thereof can be obtained at a much smaller cost. By the employment of duplicating machines complainant is enabled to sell duplicate sound-records at twenty-five cents a piece, wholesale.

Duplicating machines are of simple construction and of small dimensions. Fifty such machines can operate in a room of moderate size and turn out a product of about five thousand a day.

I am acquainted with Cleveland Walcutt, one of the defendants, and have long been familiar with his business. For some years he was a well known maker of "originals" sound-records, using ordinary phonographs and graphophones, and long after complainant began the manufacture of duplicate records, he and his firm advertised to the trade, and attempted to make capital of, the fact that they made and sold originals only. They began to use duplicating machines

and to manufacture duplicate records about the first of January 1897, or shortly before that time. Where they got their duplicating machines I do not know, as they have very carefully guarded this part of their business.

I have lately heard of the organization under the New Jersey laws of a corporation known as the "Consolidated Phonograph Companies, Limited". The names of the incorporators are unknown in talking machine circles, but from various sources I have heard that this concern was organized by the defendants in this case and Mr. Tewksbury, against whom suits are also pending in another district. I apprehend, from reports that have reached me concerning the defendants, that their purpose is, as soon as the decrees against them in this jurisdiction are enforced, to transfer their duplicating machines to another place, and to carry on business and supply the market through this new corporation. Should these machines be moved from their present location it would be extremely difficult to ascertain their whereabouts and meanwhile a great many thousands of duplicates could be made and sold, thereby inflicting great and irreparable injury on complainant. Owing to the simplicity of the machines required for making duplicate sound-records, and to the difficulty of distinguishing between duplicate sound-records made by complainant and those of unauthorized manufacturers, it would be possible to carry on for a long time clandestinely and in another place the infringing manufacture from which defendants have just been enjoined in this district.

I am familiar with the several forms of duplicating machines which have been developed up to this time, and thoroughly understand their construction and operation. They are not capable of any use except to make engraved sound-records, such as described and claimed in the Bell & Tainter patent #341,214.

Sworn to and subscribed before me this 8th day of February, 1898.

Jno. L. Bernstein
Comm. of Deeds

H. J. Cummins
Notary Public
Kings County Cert. filed in New York County

Fol. 1.

UNITED STATES CIRCUIT COURT.

SOUTHERN DISTRICT OF NEW YORK.

- -x

AMERICAN GRAPHOPHONE,

Complainant,

vs. IN EQUITY.

WALCUTT & LEEDS,

Defendants.

- -x

2. STATE OF NEW YORK)
: ss:
COUNTY OF NEW YORK)

CLEVELAND WALCUTT, being duly sworn, deposes and says as follows:

I am one of the defendants in this action. An action was brought for infringing the patents of the plaintiffs for sound records, No.341, 214, claims 7, 8, 10, 17 and 18 and at the same time another suit was brought against me for infringing the patent of the plaintiff for

3. blank tablets for receiving sound records, Judge Wheeler decided that the patents for sound receiving tablets were valid and issued an injunction against me restraining me from continuing to manufacture or sell same. At the same time Judge Wheeler handed down a decision in the other

case that in making the sound records we acted partly under the patents of the plaintiffs and partly not under their patents, and that therefore the plaintiffs were entitled to the verdict. (See copy of decision attached) I was present, January 19th last when Judge Wheeler signed the
4. decrees in both actions. At this time the plaintiff's counsel handed Judge Wheeler a decree to be signed in the case for infringing the "sound record" patents enjoining us from making "duplicate sound records". In the testimony it was shown, and admitted by defendants, that we had made sound records on blanks made by ourselves which in the other case were decided to be infringements and Judge Wheeler said that the infringements in the "sound record" case was in making the sound records on these infringing
5. blanks, or tablets. He accordingly inserted in the decree the words "on blanks not procured from the plaintiffs", making the decree enjoin us from "the manufacture, use and sale of the said 'duplicate' sound records on blanks not procured from the plaintiff" (a certified copy of this decree is attached hereto). The plaintiffs applied for a resettlement of the decree and a hearing before Judge Wheeler was heard on this matter January 22nd, at which I was also present. Mr. Mauro, counsel for the plaintiff, stated to
6. Judge Wheeler that they claimed that we had infringed their patents, not only in making the sound records on infringing blanks, but also in making "duplicate sound records" on

machines which were only authorized to make original sound records, and urged that the words "on blanks not procured from the plaintiff" be left out of the decree so that we would be restrained from making all "duplicate sound records". Judge Wheeler said that he had not understood before that the plaintiff claimed that we infringed in the use of the machines. In answer to Judge Wheeler's questions

7. Mr. Mauro admitted that the machines we used were licensed by the plaintiff, but said that they were only licensed to make original records and not duplicate records. Mr. Mauro also admitted to Judge Wheeler that the duplicate records made by us were the same in appearance, and usefulness as the original records. In fact, could not be distinguished from them, and Judge Wheeler said that he could not draw the line under this patent, or under the proofs, between the right of the defendants to make the original

8. records (which was admitted by the plaintiff) and their right to make a duplicate record which was exactly the same thing in its construction, appearance and use. Mr. Mauro said that the plaintiff did not need the decree as it stood, because they already had the other decree restraining us from making blanks and this alone would prevent us from making records except on authorized blanks. Judge Wheeler then suggested that the words "on blanks not procured from the plaintiff" be omitted and the words "on machine not procured from the plaintiff or made under

this patent" be substituted in their place. Mr. Mauro
9. objected that this form of decree would permit us to use the machines to make duplicate records, and called Judge Wheeler's attention to my testimony in the case where I said that we used the regular phonographs made by the Edison Phonograph Works, and purchased by us from the North American Phonograph Co., and licensed by the plaintiff, in connection with a simple mechanical device for transferring the original record to the blank on the receiving machine. Judge Wheeler said that if we had a
10. secret method of our own which enabled us to do what the plaintiff could not do or would permit us to make 20 records where the plaintiff could made one, we were entitled to the benefit of that knowledge, and he would not make the decree so that it would prevent us from using our machines in that way. He then signed the decree with the change suggested by him, restraining us from making duplicate sound records, on machines not procured from the Plaintiff or made under this patent, the license being of course
11. under this patent.

The decree as it then stood, and still stands, reads that the defendants have infringed the patent of the plaintiff by making duplicate sound records. This is indisputable, because it was shown in the evidence and is admitted by us, we made sound records on blanks of our own

manufacture, which Judge Wheeler decided in the other suit were infringements. The decree in the other case prevents us from any further use of such blanks, and the decree in this case, as I understand Judge Wheeler, allows us to

12. make duplicate sound records on the machines which we have,

15. licensed by the plaintiff, or on others which we might procure, from them or licensed by them, but restrains us from making said duplicate sound records on any machines we might make ourselves or have made by anyone not licensed by the plaintiff.

I have read the affidavit of Roland F. Cromelin, who states: "Duplicating machines are of simple construc-

13. tion and of small dimensions. Fifty such machines can operate in a room of moderate size, and turn out a product of 5000 a day."

The machines we use are standard Phonographs; no simpler in construction, no cheaper and no smaller, than any Phonographs. They occupy as much or more room as the Phonographs used by the plaintiffs licensed to make their master or so-called original sound-records.

14. We have continued to make the so-called duplicate sound records since the signing of the decree, as I am thoroughly satisfied that it was Judge Wheeler's opinion that we could. Also, we have been advised by our Counsel that this was his understanding of Judge Wheeler's opinion.

I have made no secret of this, and have told everyone with whom I have conversed on the subject that I considered the decree permitted us to make the records. I have not installed any additional duplicating machines since
15. the decree was signed, nor told anyone that I had. To do so it would be necessary to procure the requisite number of Phonographs, and I have not purchased any.

I have read the affidavit of Victor H. Emerson. Mr. Emerson intimates that the records bought from us and taken to him by Mr. Burns, are not made on regular Phonographs, but on some other kind of duplicate machines. This is not so. The records, if bought from us, are made
16. on regular licensed phonographs purchased by me from the North American Phonograph Company and on blanks purchased from the plaintiff.

I have this day made in the presence of my counsel at his office, 31 Nassau Street, on a standard Edison Phonograph, in exactly the condition as sold by the makers without any addition to the machine and without taking any thing from it, an original record which I have marked X.X. for identification herewith, which Exhibit shows the same
17. marks which Mr. Emerson in his affidavit says cannot be made except on a special duplicating machine.

Except that the Consolidated Phonograph Companies Ltd. of New Jersey, sell records made by my company, I have no connection with that company whatever. I am not inter-

ested in the company in any way, and do not know who the incorporators or officers are. I did not tell Mr. Easton that Mr. Tewksbury and I were together in said corporation. I do not understand Mr. Easton's object in saying so, and
18. am forced to think that he expects to prejudice the Court against me in some way.

I did ask Mr. Easton if he would let me make duplicate records on a royalty, but that was before the decree was signed. I was ready then, and am now, to settle any litigation whether I am right or wrong, as no ordinary business can stand the expense of continued patent litigation. It has always been the policy of the Graphophone
19. Company, with its large resources, to try to destroy the business of smaller competitive dealers by involving them in the expense of defending their rights, although they use the Edison machine, as we do.

In addition to the above, it is my opinion that we are not violating Judge Wheeler's decree in making the records, because all the claims in the patent on which this suit is brought are for sound-records. All the de-
20. scription in the patent shows clearly that the sound records must be, as the name indicates, "records of sound".

To illustrate: -- The inventor of photography might have secured a patent on his process, and also on the photographs produced by it. In the patent for the photograph (the product), he might have described it as a

"sunlight record", or a "record of the sun's rays reflected from different objects on-to a sensitized plate". Any one buying a photographing camera, carrying with it the right
21. to make the patented "sunlight records" or photographs, could make these photographs on a plate. By treating the plate with acid he could make what are called half-tone plates, and putting these half-tone plates in a printing press could print any number of half-tones, which perhaps would be exactly identical with the patented "sunlight records" or photographs, but still could not be considered as "records of the sun's rays reflected from objects on to
22. a sensitized plate".

It is precisely the same in the case of the records we make. They are not "sound records" or "records of sound", but mechanical preproductions or copies of "sound records" made without sound, just as the printed half-tones are made without sunlight.

It should not be considered that because the records we make are not sound records that they cannot be made upon the regular phonograph. The phonograph as it is
23. built is so made that it is capable of producing either the sound record or the duplicates. The phonograph is built practically on the lines of an automatic screw-cutting lathe. The object being to cut a spiral groove on a cylinder. In the phonograph the cutting tool is pivoted

so that the point is free to move so as to cut notches in the thread cut on the cylinder. These notches make the sound in reproducing the record. When the phonograph is in motion, and the cutting tool in contact with the cylinder or blank, sound waves coming into contact with the

24. diaphragm will cause the cutting tool to turn on its pivot, and to cut notches in the cylinder corresponding to the sound waves. However, without any sound waves, mechanical force can be applied to the diaphragm or the cutting tool causing the tool to cut notches in the blank which would produce synchronous or musical sounds when used on a reproducing phonograph, provided the force was applied to the diaphragm or the cutting tool skillfully enough.

25. The phonograph is not only capable of making the duplicate records, but is capable of making them much better than the other special duplicating machines described in the plaintiff's affidavits herein.

We have the right and license to make duplicates under patent 341287 and, this is one of our defenses to a suit now pending on this patent which was filed February 8, 1897, and in which this plaintiff took its first

26. proofs onFebruary 23, 1898.

A copy of the bill of complaint is herewith submitted which shows that the said suit is on claims 4, 14, 15 and 16 of that patent which cover generally the whole

art of making duplicates.

Patent 341287 was pending in the Patent Office at the same time with, and bears the same date as, the patent in suit.

Patent 341287 was owned by the North American Phonograph Co. with the right to use, let or sell to

27. others to be used all the inventions it covers at the time I purchased the record plant from the Receiver, as appears from a contract dated July 17, 1888 and at the time and for six years before I purchased the record plant from the Receiver , the North American Phonograph Co. made duplicate records withthe knowledge and consent of the plaintiff and had the rights to, and did, sell the same. My purchase of the record plant from the Receiver of the

28. North American Phonograph Co. was under order of the Court in the usual course of such insolvent proceedings, with advertised notice as I believe, and certainly with notice to the plaintiff, and plaintiff shared in the $1700. which I paid for the plant, and neither the plaintiff, the Receiver or the Court gave me any intimation or notice that I was not purchasing the plant without any liability of any sort or kind to any of the plaintiffs's patents,

29. and I believed then, and now believe, that I am not liable to the plaintiff under any of its talking machine patents.

I have never to my knowledge seen the specimens

of Exhibits referred to in the plaintiff's affidavits and have never had the opportunity to do so for the reason that the order signed by Judge Lacombe is simply on motion of counsel for complainant without naming him or them, but I am informed and believe that said specimens are a part of the 5000 blanks which I purchased from the

30. plaintiff for the purpose of making duplicates.

Cleveland Waleutt.

Sworn to and subscribed
before me this 18th day of
March, 1898.

Benjamin Gates
Notary Public
N. Y. Co

UNITED STATES CIRCUIT COURT

SOUTHERN DISTRICT OF NEW YORK.

AMERICAN GRAPHOPHONE COMPANY,
Complainant,

vs IN EQUITY.

WALCUTT & LEEDS,
Defendants.

STATE OF NEW YORK, :
: ss
COUNTY OF NEW YORK. :

Edward F.Leeds,being duly sworn,says:-

I am one of the defendants in this action. I have been in the phonograph business continuously for the past ten years and am an expert in the use of the machine,especially in making records,both originals and duplicates. In making records ,myself and associates, have used only Edison Phonographs which were purchased by us from the Receiver of The North American Phonograph Company. Since the time that the decision was reached in this action and the decree first signed we have used in making records none but blanks procured from the plaintiff or from their licensee, the National Phonograph Company. Immediately after the first decree was signed we purchased five thousand blanks from the plaintiff, which they knew were to make duplicate records on, and used them for that purpose.

In making duplicate records we use two phonographs; one to reproduce the original record ~~XXX~~ that is to be copied and another to record the duplicate.A simple mechanical

device is used to transfer the engraved lines of sound waves on the original record to the blank tablet on the recording phonograph.It is true that Bettini and Macdonald have patented special machines designed to contain in the single machine the necessary framework and mandrels for supporting and rotating both the original record and the blank to receive the duplicate. Such machines, however, are not necessary as two phonographs can be used just as well, or better, with the assistance of the simple mechanical device above referred to.This device is an invention of ~~our~~ own which we have always kept secret as we consider it of great value. I am sure that no one but ourselves possesses the knowledge of how to make duplicates in this way.

While it was originally the intention of the inventors of the phonograph and graphophone that these machines would be useful for dictating ~~transcribing~~ correspondence to, to be transcribed by an amanuensis or typewriter, they have since proved to be useful in a number of other ways.No restrictions as to their use have ever been made by the owners of the patents at the times the machines were sold and, in fact, the sellers were only too glad to sell them no matter to what purpose the buyer wanted to put them. Among the various uses to which the machines were put was the "nickle-in-the-slot" idea.Many buyers attached to phonographs ~~&c~~ devices into which a nickle could be dropped and a song or tune would be played by the machine in return. The makers of the phonograph did not make these "nickle-in-the-slot" attachments and the buyers had to procure them,or have them made themselves.No objection was made by the owners of the

patents. Other buyers of phonographs traveled through the country exhibiting them. In order to allow a number of persons to listen at a time special attachments were necessary to attach a number of hearing tubes to the phonographs. These attachments are known as "faurteen-way rails, fifteen-way rails, sixteen-way rails and seventeen-way rails. The makers of the phonograph did not make these rails and the users were obliged to supply themselves with them as best they could. Other buyers of phonographs exhibited them to audiences in halls or theatres by using large funnels to throw out the sound. These, funnels also they were obliged to supply themselves with as the Phonograph Works did not sell them. Other buyers of the machines used them to make original records which they sold. To do this it was necessary for the users to make special funnels adopted to their needs and more or less extensive framework amd benches for supporting the phonographs and funnels in the necessary groups for making records. All these they were obliged to get made themselves as the phonograph works did not sell them. It was known by every one that the phonographs were used in these different ways and the owners of the patents were glad to sell them. Still other purchasers of the phonographs (ourselves) use them for making duplicate records. Instead of using the phonograph to cut a record corresponding to sound waves thrown upon the diaphragm of the machine directly by the voice of a singer placed in front of a receiving funnel attached to the machine we make the phonograph cut the record from vibratory movements carried to it over a mechanical device arranged for that purpose. Outside of this device the phonograph as it is sold by the makers is fully

equipped for this use and the addition of the device to the machine is no more a misuse of the machine than when the maker of original records adds the receiving funnels or when the exhibitor adds his amplifying funnel or his fifteen-way rails or his "nickle-in-the-slot" attachment. In fact, at the time the machines we use were made and sold, all phonographs as originally sold were incomplete and, without making additions, could not be used except, perhaps, for ~~making~~ dictating & transcribing letters. The other uses were known, however, and the machines were sold with the full knowledge that they would be added to and used in the different ways I have described. The demand for these additional appliances finally became so great that both the American Graphophone and the National Phonograph Company began to make and sell the amplifying horns, exhibitors' rails and nickle-in-the-slot attachments.

SWORN TO AND SUBSCRIBED
BEFORE ME THIS 18th. day
MARCH, 1898.

Edward F. Leeds

Samuel R. Bell
NOTARY PUBLIC, KINGS CO.
(Cert. filed in N. Y. County.)

Fol. 1.

UNITED STATES CIRCUIT COURT,

SOUTHERN DISTRICT OF NEW YORK.

AMERICAN GRAPHOPHONE COMPANY,
Plaintiff

--against--

WALCUTT and LEEDS,
Defendants.

STATE OF NEW YORK)
: ss:
COUNTY OF NEW YORK)

H. A. WEST, being duly sworn, deposes and says:

2 I am solicitor for the defendants herein. On March 17th inst. Mr. Cleveland Walcutt made at my office, 31 Nassau Street, and in my presence, the Exhibit marked XX, D and W on a regular phonograph, by speaking into the tube.

Sworn to and subscribed before me this 18 day of March, 1898.

H. A. West

Benjamin Yates
Notary Public
N. Y. Co.

Fol. 1.

UNITED STATES CIRCUIT COURT,

SOUTHERN DISTRICT OF NEW YORK.

- x

AMERICAN GRAPHOPHONE COMPANY,
Plaintiff

--against--

WALCUTT and LEEDS,
Defendants.

- x

STATE OF NEW YORK)
: ss:
COUNTY OF NEW YORK)

GRACE DAVENPORT, being duly sworn, deposes and

2 says: I am typewriter and stenographer in the office of Peter B. Olney, George Carlton Comstock and H. Albertus West, 31 Nassau Street.

On March 17th inst. Mr. Cleveland Walcutt made in Mr. West's room, and in my presence, the phonograph record Exhibit marked X. X. D. W. The same was made on a regular Edison phonograph by speaking into the tube. I also spoke into the tube and so did Mr. West.

Sworn to and subscribed before me this 18 day of March, 1898.

Grace Davenport.

Benjamin Gates
Notary Public
N. Y. Co

UNITED STATES CIRCUIT COURT.

SOUTHERN DISTRICT OF NEW YORK.

AMERICAN GRAPHOPHONE COMPANY, Complainant, vs, WALCUTT & LEEDS, Defendants.	IN EQUITY.

STATE OF NEW YORK :
: ss:
COUNTY OF NEW YORK. :

CIEVELAND WALCUTT, being duly sworn, deposes and says as follows:

I am one of the defendants in this action and have already made another deposition herein. In the former action brought by complainant against Walcutt & Leeds for infringing claims 7, 8, 10, 17, and 18 of patent number 341,214 I testified that the machines we used for making duplicate records were the same phonographs that we purchased from the North American Phonograph Company and which were licensed by the complainant. In the argument of that case and at the settlement of the decree the counsel for the complainant admitted that the complainants had licensed these machines. Since testifying in the former case, above referred to, neither myself nor Mr. Leeds, nor the Walcutt & Leeds, Limited, nor any one connected with said corporation have used any other than these same phonographs. In making duplicate records on these phonographs the machines are used in pairs, one machine being used to reproduce the record to be duplicated

and the other machine to record the duplicate record. The two machines are placed as close together as their construction will permit and a simple mechanical mechanism used to transfer the record from one machine to the other. The motors made ~~XXXX~~ for the machines are not used as they are run from permanent shafting. ~~I have taken one set of these machines from the bench on which they are operated and marked them "Defendants duplicating machines, exhibit~~

Sworn to and subscribed before me this 11th day of March 1898

Benjamin Yates
Notary Public
New York County

Cleveland Walcutt

UNITED STATES CIRCUIT COURT.

Southern District of New York.

American Graphophone Company |
vs. | In Equity.
Walcutt and Leeds. |

City, County and |
| ss:
State of New York. |

WILLIAM B. VANSIZE, being duly sworn, deposes and says:

I am 45 years of age and reside in New York City; my office and place of business is at No. 253 Broadway, in said City. Iam by profession a solicitor of patents and an expert in patent causes; I have been continuously employed in this capacity for eighteen years last past.

I have read United States Letters-Patent No. 341,214, dated May 4th, 1886, to Bell and Tainter, and believe that I understand the same. The subject matter described and claimed is the record of a sound, that is, the record of air vibrations; the vibration of the air, a diaphragm upon which the vibrations impinge, a cutting tool, and a surface to be cut, are all necessary and characteristic features. The use and employment of these characteristic features to produce a permanent record was the entire subject matter, and the only matter presented to the Patent Office, or considered by the Patent Office in the application which resulted in this patent in suit. The claims sued upon emphasize this fact. They read as follows:-

7. A sound record consisting of a tablet or other solid body having its surface cut or engraved with narrow lines of irregular or varied form corresponding to sound waves, substantially as described.

8. A sound record consisting of a tablet or solid body having its surface cut or engraved with a number of lines of variable cross-section, the irregularities or variations corresponding in form to sound waves, substantially as described.

10. The sound or speech record cut or engraved in wax or a wax-like composition, substantially as described.

17. The sound record in the form of an irregular groove with sloping walls cut in solid material, substantially as described.

18. The sound record cut in wax or wax-like composition in the form of an irregular groove with sloping walls, substantially as described.

I have also read and believe that I understand United States Letters-Patent No. 341,287, dated May 4th, 1886, to Sumner Tainter; this patent was issued the same day as the patent in suit, upon an application subsequently filed and concurrently pending; this patent purports to be for a different and distinct and sole invention, to wit:- a method of making a copy of sound records, a simple mechanical process in which the vibratory diaphragm and air vibrations are not necessarily and directly employed. Figs. 1 and 2 show the apparatus. There is a plate 200, containing a sound record and a plate 204, upon which a record is to be cut by means of the mechanical connection between the two plates designated by the numerals 211 and 213. There is no employment of air vibrations and there is notvibrating diaphragm, both of which are necessary characteristics of the first above-named patent. The patents are clearly distinct and the subject matter of the second patent is not shown, described or claimed in the first patent. The claims of the second patent which I understand

are involved in a separate and distinct suit, clearly emphasize the distinct character of the subject-matter involved in the two separate suits. I quote the claims of the second patent referred to:-

> 4. The method of copying sound records by causing the record which is to be copied to impress movements corresponding to the recorded sound waves upon a cutting tool, and thereby engraving or cutting out a similar record in the surface of a suitable tablet, substantially as described.
>
> 14. The combination, with a tablet having a record formed therein and a tablet for receiving a record, of a follower having a fine though blunt edge for rubbing over the record, a non-rotating cutter movable with said follower for engraving the record in the second tablet, and mechanism for revolving said tablets and causing the follower to follow the record, and the cutter to trace a spiral line upon the second tablet, substantially as described.
>
> 15. The combination, with the two tablets and the operating mechanism, of the follower having a fine though blunt edge for rubbing over the record, the spring for holding it against the record, the non-rotatory cutter, and the adjustable connection between the follower and the cutter to enable the depth of cut to be regulated, substantially as described.
>
> 16. The method of preparing sound records, consisting infirst cutting the record in a soft material - such as wax - by the action of sound waves upon a vibratory cutting style, and then causing said wax record or a copy of the same to impress corresponding vibrational movements upon a graver or cutting-tool in contact with a record-tablet, substantially as described.

Wm. B. Vansize

Subscribed and sworn to before me

this 10th day of March, 1898.

Francis A. Cheney

NOTARY PUBLIC,
KINGS COUNTY,
CERTIFICATE FILED IN N. Y. Co.

UNITED STATES CIRCUIT COURT,

SOUTHERN DISTRICT OF NEW YORK.

AMERICAN GRAPHOPHONE COMPANY, Complainant, vs WALCUTT & LEEDS, Defendants	IN EQUITY.

STATE OF NEW YORK, :
: ss
COUNTY OF NEW YORK. :

WILLIAM B.VANSIZE,being duly sworn,says:- I am a solicitor of patents and patent expert and have been such for 12 years I have read and understand patent No 341214 and No 341284

I am familiar with the proces of making duplicate records by using two independent phonographs and also the processes described in the patents of Bettini and Macdonald. While it may be ~~MMM~~ some advantage to make ,for the purpose of duplicating, a special machine containing two cylinder mandrels and proper mechanism for revolving them simultaneously at the same speed with intermediate mechanism for transferring the record from one cylinder to the other,such a machine is not absolutely necessary as the ordinary phonograph contains all the mechanism necessary to enable two of them to be used in conjunction for making duplicate records. One phonograph can be used to reproduce the record that is to be duplicated and another to record the duplicate and a separate mechanism to transfer the vibrations given to

the style of the reproducing phonograph to the cutting tool of the recording phonograph.It is a simple matter to speed the two machines so that the mylinders will revolve at the same speed. The recording phonograph used in this way is performing its proper functions as it was built to perform them. The product of the machine(the record)is exactly the product which the phonograph was made to produce. The record made is exactly the same, construction and appearance and is just as much the legitimate and normal product of the phonograph whether the cutting style in making the record is actuated by the vibrations of sound waves carried to it through a funnel directly from the mouth of a singer or whether the cutting style is actuated by vibrations carried to it by a mechanical device from another phonograph. The addition to the phonographs of the mechanism for thansferring the vibrations does not alter the fact that they are still ~~MM~~ phonographs.For years all phonographs have been sold by the makers incomplete and it is necessary to add to them in order to make even original records such as are sold on the market.The addition of the mechanism used in duplicating does not modify the character of the phonograph any more than the addition of the funnel used in making original records.

It is undoubtedly advantageous to use for duplicating a single special machine built for that purpose but,at the same time,owners of regular phonographs who cannot get such special machines are not debarred from making duplicates, as they can make them on the regular phonographs.

It is my opinion that a duplicate record made by mechanical means instead of being made by the original sound vibrations as is the case when an original sound-record is

made is not a sound record as described in patent 541,214 and on which claims 7, 8, 10, ~~14~~ 17, and 18 are based. A sound record according to the description in the patent must be ,as the name indicates, a record of sound .This is not the case where the record is made by mechanical means and sound is not employed.

Sworn to and subscribed
before me this ~~12th~~ day
of March,1898.

U. S. Circuit Court
Southern District of N. Y.
In Equity
On Contempt Proceedings.

American Graphophone Co.
vs.
Walcutt & Leeds –

Affidavit of P. Mauro,
with
Notice to Dfdts.

Pollok & Mauro,
R. N. Dyer,
S. O. Edmonds
Counsel for Compl't.

UNITED STATES CIRCUIT COURT,

Southern District of New York.

AMERICAN GRAPHOPHONE COMPANY, -vs.- CLEVELAND WALCUTT and EDWARD F. LEEDS.	In Equity. On Patent No.341,214.

H. Albertus West, Esq.,
Solicitor for Defendants.

YOU ARE HEREBY NOTIFIED that at the hearing of the motion for attachment for contempt to be ~~had~~ heard at Brattleboro, Vermont, before his Honor Judge Wheeler, on Tuesday, March 22, 1898, we shall use, in addition to the papers heretofore served upon the defendants, the affidavit of Philip Mauro, Esq., hereto annexed and a copy of which is served upon you herewith.

Respectfully,

Richd N. Dyer

Counsel for Complainant.

New York, March 16, 1898.

Service of the above notice and affidavit admitted this 16th day of March, 1898. at 3.15 P.M

I protest against the use of the attached affidavits on this motion—as

H A West
Sol for Defendants

U.S. Circuit Court
Southern Dist of N.Y.

6542

6542

American [illegible]
Co

vs

Walcutt & Lucy

Affidavits

H. A. West
21 Nassau St
N.Y. City

U.S. CIRCUIT COURT
FILED
MAR 28 1898
JOHN A. SHIELDS, CLERK

Service of [illegible] affidavits
admitted this 18th March 98
[illegible]

UNITED STATES CIRCUIT COURT

SOUTHERN DISTRICT OF NEW YORK.

AMERICAN GRAPHOPHONE COMPANY, Complainant, vs WALCUTT & LEEDS, Defendants.	IN EQUITY.

STATE OF NEW YORK, :
: ss
COUNTY OF NEW YORK. :

Edward F.Leeds,being duly sworn,says:-

I am one of the defendants in this action. I have been in the phonograph business continuously for the past ten years and am an expert in the use of the machine,especially in making records,both originals and duplicates. In making records ,myself and associates, have used only Edison Phonographs which were purchased by us from the Receiver of The North American Phonograph Company. Since the time that the decision was reached in this action and the decree first signed we have used in making records none but blanks procured from the plaintiff or from their licensee, the National Phonograph Company. Immediately after the first decree was signed we purchased five thousand blanks from the plaintiff, which they knew were to make duplicate records on, and used them for that purpose.

In making duplicate records we use two phonographs; one to reproduce the original record ~~XXX~~ that is to be copied and another to record the duplicate.A simple mechanical

device is used to transfer the engraved lines of sound waves on the original record to the blank tablet on the recording phonograph.It is true that Bettini and Macdonald have patented special machines designed to contain in the single machine the necessary framework and mandrels for supporting and rotating both the original record and the blank to receive the duplicate. Such machines, however, are not necessary as two phonographs can be used just as well, or better, with the assistance of the simple mechanical device above referred to.This device is an invention of ~~ours~~ our own which ~~we~~ we have always kept secret as ~~we~~ we consider it of great value. I am sure that no one but ourselves possesses the knowledge of how to make duplicates in this way.

While it was originally the intention of the inventors of the phonograph and graphophone that these machines would be useful for ~~transcribing~~ dictating correspondence to, to be transcribed by an amanuensis or typewriter, they have since proved to be useful in a number of other ways.No restrictions as to their use have ever been made by the owners of the patents at the times the machines were sold and, in fact, the sellers were only too glad to sell them no matter to what purpose the buyer wanted to put them. Among the various uses to which the machines were put was the "nickle-in-the-slot" idea.Many buyers attached to phonographs ~~&~~ devices into which a nickle could be dropped and a song or tune would be played by the machine in return. The makers of the phonograph did not make these "nickle-in-the-slot" attachments and the buyers had to procure them,or have them made themselves.No objection was made by the owners of the

patents. Other buyers of phonographs traveled through the country exhibiting them. In order to allow a number of persons to listen at a time special attachments were necessary to attach a number of hearing tubes to the phonographs. These attachments are known as "fourteen-way rails, fifteen-way rails, sixteen-way rails and seventeen-way rails. The makers of the phonograph did not make these rails and the users were obliged to supply themselves with them as best they could. Other buyers of phonographs exhibited them to audiences in halls or theatres by using large funnels to throw out the sound. These, funnels also they were obliged to supply themselves with as the Phonograph Works did not sell them. Other buyers of the machines used them to make original records which they sold. To do this it was necessary for the users to make special funnels adopted to their needs and more or less extensive framework and benches for supporting the phonographs and funnels in the necessary groups for making records. All these they were obliged to get made themselves as the phonograph works did not sell them. It was known by every one that the phonographs were used in these different ways and the owners of the patents were glad to sell them. Still other purchasers of the phonographs (ourselves) use them for making duplicate records. Instead of using the phonograph to cut a record corresponding to sound waves thrown upon the diaphragm of the machine directly by the voice of a singer placed in front of a receiving funnel attached to the machine we make the phonograph cut the record from vibratory movements carried to it over a mechanical device arranged for that purpose. Outside of this device the phonograph as it is sold by the makers is fully

equipped for this use and the addition of the device to the machine is no more a misuse of the machine than when the maker of original records adds the receiving funnels or when the exhibitor adds his amplifying funnel or his fifteen-way rails or his "nickle-in-the-slot" attachment. In fact, at the time the machines we use were made and sold, all phonographs as originally sold were incomplete and, without making additions, could not be used except, perhaps, for ~~making~~ dictating & transcribing letters. The other uses were known, however, and the machines were sold with the full knowledge that they would be added to and used in the different ways I have described. The demand for these additional appliances finally became so great that both the American Graphophone and the National Phonograph Company began to make and sell the amplifying horns, exhibitors' rails and nickle-in-the-slot attachments.

SWORN TO AND SUBSCRIBED
BEFORE ME THIS 18th. day
MARCH, 1893.

Edward H. Amet

Samuel R. Bell

UNITED STATES CIRCUIT COURT,

Southern District of N. Y.

AMERICAN GRAPHOPHONE CO.

vs.

CLEVELAND WALCUTT & EDWARD F. LEEDS.

ORDER

Pollock & Mauro,

Counsel for Complainant

11 Broadway, N. Y.

LAW OFFICES
H. ALBERTUS WEST,
BANK OF COMMERCE BUILDING,
31 NASSAU STREET.

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NEW YORK, Mch 29 1898

Hon Hoyt H. Wheeler
Judge U.S. Circuit Court

Dear Sir:

I have just received by mail a proposed order in the Graphophone case on Contempt proceedings; also a copy of the letter which accompanies the same.

In separate cover I send ~~I enclose~~ a copy of plaintiffs printed brief in the case before Judge Lacombe. In this I have marked some passages on pages 19, 20, 21, 23 and 24 and some on the detaching sheet. I have only that I did not "confuse" you, or mislead

ized by the defendants and each of them from their violation of said injunction, together with the damages suffered by the complainant thereby, ~~and complainant's costs of the present proceeding~~

NEW YORK, ... 189 8

You, or confound the issues of the two suits; that you did not follow the "line of least resistance," that "I did not succeed in introducing into the decree what I considered a sufficient ambiguity etc". I have denied these things in court, and more, out of court, with all my power.

I shall only say that I have not consented, to the form of the proposed order. It seems to me that the contempt proceedings took substantially the form of a rehearing or of a motion to modify

ized by the defendants and each of them from their violation of said injunction, together with the damages suffered by the complainant thereby. ~~and complainant's costs of the present proceeding~~

...ES
...US WEST,
...MERCE BUILDING,
...NASSAU STREET.

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NEW YORK,........................189

the decree In this case the defendants it seems to me should not pay more costs than is incident to such proceedings — not counsel fees. And it seems to me that the Master's report should be confirmed by the Court before the defendants are held to a judgement.

Very Respectfully

H A West

It is further ORDERED, ADJUDGED AND DECREED ...

case be, and it hereby is, referred to Henry Galbraith Ward, Esq., to ascertain and report to the Court the profits realized by the defendants and each of them from their violation of said injunction, together with the damages suffered by the complainant thereby. ~~and complainant's costs on the present proceeding~~

Received for record Sept 22nd 1887 and recorded in Liber P. 37, page 38, of Transfers of Patents.

IN TESTIMONY WHEREOF I have caused the seal of the Patent Office to be hereunto affixed.

Benton J. Hall

Commissioner of Patents.

Ord. H.S.H.

cept of which is hereby acknowledged, do hereby grant, assign, and convey unto the said "The Volta Graphophone Company of Alexandria, Virginia," the letters-patent of the United States issued to us for an improvement in "recording and reproducing speech and other sounds," which said letters-patent are dated May 4th, 1886, and numbered 341,214 the invention therein described or intended to be described, and all the exclusive rights and privileges thereby secured or intended to be secured, together with any and all re-issues, renewals and extensions thereof that may be granted: To have and to hold the same unto the said "The Volta Graphophone Company of Alexandria Virginia," its legal representatives and assigns to the full end of the term or terms for which said letters-patent or any re-issues, renewals and extensions thereof, are or may be granted.

Witness our hands and seals this 29th day of March, — A.D. 1887.

Chichester A. Bell [Seal]

Summer Tainter. X [Seal]

United States Circuit Court
Southern District of New York.

American Graphophone Company
-vs-
Cleveland Walcutt and
Edward F. Leeds.

In Equity

(Under patent No. 341,214.)

"COMPLAINANT'S EXHIBIT BELL & TAINTER ORIGINAL ASSIGNMENT"

Notary Public,
District of Columbia.

JAMES H. SAVILLE,
COUNSELLOR AT LAW,
WASHINGTON, D. C.

Know all men by these presents that we, Chichester A. Bell and Sumner Tainter, of Washington City, in the District of Columbia, in consideration of five dollars to us paid by "The Volta Graphophone Company of Alexandria, Virginia," a corporation created under the laws of the commonwealth of Virginia, receipt of which is hereby acknowledged, do hereby grant, assign, and convey unto the said "The Volta Graphophone Company" of Alexandria, Virginia" the letters-patent of the United States issued to us for an improvement in "recording and reproducing speech and other sounds" which said letters-patent are dated May 4th, 1886, and numbered 341,214 the invention therein described or intended to be described, and all the exclusive rights and privileges thereby secured or intended to be secured, together with any and all re-issues, renewals and extensions thereof that may be granted: To have and to hold the same unto the said "The Volta Graphophone Company of Alexandria, Virginia," its legal representatives and assigns to the full end of the term or terms for which said letters-patent or any re-issues, renewals and extensions thereof, are or may be granted.

Witness our hands and seals this 29th day of — March, — A. D. 1887.

Chichester A. Bell [Seal]

Sumner Tainter. [Seal]

United States Circuit Court
Southern District of New York.

American Graphophone Company
-vs-
Cleveland Walcutt and
Edward F. Leeds.

In Equity

(Under patent No. 341,214.)

"COMPLAINANT'S EXHIBIT BELL & TAINTER ORIGINAL ASSIGNMENT"

Notary Public,
District of Columbia.

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PATENT OFFICE
SEP. 22 1887
U.S.A.

U. S. CIRCUIT COURT
FILED
NOV 12 1897
[illegible] A. SMIDLE[illegible] CLERK

19526 2

Received for record Jan 25" 1893. and recorded in Liber L47, page 236, of Transfers of Patents.

IN TESTIMONY WHEREOF I have caused the seal of the Patent Office to be hereunto affixed.

W. E. Simonds
Commissioner of Patents.

Exd. F.C.T.

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UNITED STATES CIRCUIT COURT
SOUTHERN DISTRICT OF NEW YORK.

AMERICAN GRAPHOPHONE COMPANY
-vs-
CLEVELAND WALCUTT and
EDWARD F. LEEDS.

In Equity.
(under Patent No. 341,214.)

"COMPLAINANT'S EXHIBIT VOLTA GRAPHOPHONE COMPANY'S ORIGINAL ASSIGNMENT".

Reeve Lewis
Notary Public,
District of Columbia.

...mpany
...aws of
...cond part,

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...riginal.
...v of the
...States

for improvements in recording and reproducing speech and other sounds to wit;

No. 341,212. Dated May 4, 1886, granted to Alexander Graham Bell, Chichester A. Bell and Sumner Tainter, for Improvement in Reproducing Sounds from Phonograph Records.

No. 341,213. Dated May 4, 1886, granted to Alexander Graham Bell, Chichester A. Bell and Sumner Tainter, for Transmitting and Recording Sounds by Radiant Energy.

No. 341,214. Dated May 4, 1886, granted to Chichester A. Bell and Sumner Tainter for Recording and Reproducing Speech and other sounds.

No. 341,287. Dated May 4, 1886, granted to Sumner Tainter for Recording and Reproducing Sounds.

No. 341,288. Dated May 4, 1886, granted to Sumner Tainter

Counterparts of assignment No. 2
Feby 23, 1893
Jas [illegible]

This Indenture made this 24th day of January in the year One thousand eight hundred and ninety-three between the Volta Graphophone Company of Alexandria, Virginia, hereinafter termed the Volta Company, party of the first part, and the American Graphophone Company a corporation duly organized under the laws of the State of West Virginia, party of the second part, Witnesseth,

That Whereas the said Volta Company has by due and formal assignments from the original inventors and patentees become the owner of the following named patents of the United States for improvements in recording and reproducing speech and other sounds to wit;

✓ No. 341,212. Dated May 4, 1886, granted to Alexander Graham Bell, Chichester A. Bell and Sumner Tainter, for Improvement in Reproducing Sounds from Phonograph Records.

✓ No. 341,213. Dated May 4, 1886, granted to Alexander Graham Bell, Chichester A. Bell and Sumner Tainter, for Transmitting and Recording Sounds by Radient Energy.

✓ No. 341,214. Dated May 4, 1886, granted to Chichester A. Bell and Sumner Tainter for Recording and Reproducing Speech and other sounds.

✓ No. 341,287. Dated May 4, 1886, granted to Sumner Tainter for Recording and Reproducing Sounds.

✓ No. 341,288. Dated May 4, 1886, granted to Sumner Tainter

Graphophone Company all its American patents contracts &c. for the United States for the sum of Fourteen hundred dollars payable in bonds of said Company."

Now Therefore the said Volta Company in consideration of the premises and the said sum of Fourteen hundred dollars to it in hand paid the receipt whereof is hereby acknowledged, has sold assigned and transferred and by these presents does sell, assign and transfer to the said American Graphophone Company and its assigns each and every of the said inventions and improvements and in and to the letters patent therefor aforesaid and the rights and privileges thereby granted together with all reissues, extensions and renewals of the said patents or either of the same to be held and enjoyed by the said American Graphophone Company for its own use and benefit and for the use and benefit of its successors and assigns to the full end of the terms for which the said letters patent are or may be granted, as fully and entirely as the same would have been held and enjoyed by the said Volta Graphophone Company had this sale and assignment not been made.

In witness where of the said Volta Graphophone Company has authorized and directed its President. Alexander Melville Bell to sign these presents in the name of the said Company and has caused its corporate seal to be hereto affixed and

for Apparatus for Recording and Reproducing Sounds.

No. 374,133. Dated November 29. 1887 granted to Charles Sumner Tainter for Paper Cylinders for Graphophone Records.

No. 375,579. Dated December 27. 1887, granted to Charles Sumner Tainter for Apparatus for Recording and Reproducing Speech and other Sounds.

No. 380,535. Dated April 3. 1888, granted to Charles Sumner Tainter for Graphophones.

No. 385,886. Dated July 10. 1888, granted to Charles Sumner Tainter for Graphophones.

No. 385,887. Dated July 10. 1888, granted to Charles Sumner Tainter for Graphophonic Tablets.

And Whereas the said American Graphophone Company desires to acquire the entire interest in the said inventions and patents and the said Volta Company acting through and by its Board of Directors has agreed to sell and assign the said inventions and patents to the said American Graphophone Company as is evidenced by a resolution of the said Board of Directors of the said Volta Company passed at a meeting of the said Board called for the said purpose and held at the principal office of the said Volta Company in Washington in the District of Columbia on the

day of A.D. 1892, the said resolution being in the following words and figures to-wit:

"That this Company transfer to the American Graphophone Company all its American patents contracts &c. for the United States for the sum of Fourteen hundred dollars payable in bonds of said Company."

Now Therefore the said Volta Compy. in consideration of the

attested by its Secretary this day and year first above mentioned

Volta Graphophone Co
by Alex. Melville Bell
President

Attest
James L. Payne
Secretary

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U.S. PATENT OFFICE JAN 25 1898

American Graphophone Co.
619 - 14th St. N.W.
Washington D.C.

Vol. 1

FILED NOV 12 1897

U.S. PATENT OFFICE JAN 25 1898 CHIEF CLERK.

U.S. ... NOV 12 1897

1971 / 1 PATENT OFFICE ... 1898

At a Stated Term of the United States Circuit Court for the Second Circuit, held in the United States Court Rooms, on the day of March, 1898.

Present,

Hon. Hoyt H. Wheeler, ~~District~~ Judge.

AMERICAN GRAPHOPHONE COMPANY, -vs.- CLEVELAND WALCUTT and EDWARD F. LEEDS.	In Equity On Patent No. 341,214.

This cause having come on to be heard on order to show cause why the defendants should not be punished for contempt, and upon affidavits filed by both parties thereon, now, after hearing Philip Mauro, Esq., on behalf of complainant, and H. A. West, Esq., on behalf of defendants, it is

ORDERED, ADJUDGED AND DECREED that the defendants have been guilty of contempt of the injunction issued herein on January 25, 1898, by making, using and selling duplicate sound records made upon duplicating machines consisting in part of Edison phonographs and in part of other apparatus.

It is further ORDERED, ADJUDGED AND DECREED that the case be, and it hereby is, referred to Henry Galbraith Ward, Esq., to ascertain and report to the Court the profits realized by the defendants and each of them from their violation of said injunction, together with the damages suffered by the complainant thereby, ~~and complainant's costs, or the present proceeding~~

~~for attachment, including counsel fees, traveling expenses, etc.~~

It is further ORDERED, ADJUDGED AND DECREED that within some short day to be fixed upon ~~five days after~~ the coming in of the Master's report, the defendants pay over to the complainant or its counsel such sums as may be found ~~due~~ by the Master, with the costs of this proceeding to be taxed; and that in default thereof, they and each of them stand committed until said sums ~~sum be paid~~ with costs be paid, or further order of this court

Don A. Wheeler

~~U. S. District~~ Judge, ~~acting as Circuit Judge~~.

Opinion of Hon. Hoyt H. Wheeler on Order to Show Cause why Defendants Should not be Attached for Contempt, etc.

United States Circuit Court.

SOUTHERN DISTRICT OF NEW YORK.

AMERICAN GRAPHOPHONE CO. vs. CLEVELAND WALCUTT, EDWARD F. LEEDS.	In Equity.

The claims of this patent that have been sustained cover sound records, as manufactures. The defendants have phonographs acquired from the American Phonograph Company, which that company had a right, acquired from owners of this patent, to use for making such sound records, and this right came with the phonographs to the defendants. When the decrée for an injunction was settled, in order that the defendants might not be restrained from doing anything that they had a lawful right to do, the decree for the injunction was not left to be for an injunction against making, using and selling such sound records absolutely, but only against such as were not, or should not be "made on machines not procured from the plaintiff, or under this patent." All such sound records so made by the use of the phonographs so procured in subordination to the patent, and to the rights of those owning it, were left free to the defendants; all other such sound records were prohibited to them. They appear to have

Filed Apr 18. 1898

not appear to be any difference between the originals and duplicates when made; the former are understood to be made by the operation of sound waves of speech or music in the air upon the phonographs, which are made thereby to record them; the latter are understood to be copied by machines from the former, and not to be made by sound waves in the air. The latter cannot be made by using the phono-
6 graphs which the defendants have the right to use alone; other means are, and necessarily must be, employed in making them. The defendants are strictly limited by what their phonographs so procured are actually made to do, the use of those existing things only being what is free from the monopoly of the patent to the defendants. The right to make sound records by the use of certain phonographs does not include a right to make like sound records by other
7 means, or by the use of the phonographs and other means necessary to accomplish the making of them. This latter the defendants appear to have done, and by doing it they have gone outside of the license implied from the ownership of and right to use the specific phonographs from the American Graphophone Co., and have thereby violated the injunction. They have done this as officers of a corporation organized while the case was under advisement, but that does not make their own acts any less a violation of the injunction. They must therefore be adjudged guilty of contempt.

8 They claim to have been misled by the wording of this part of the decree, and as this proceeding is in its nature criminal, although for the protection of a civil right, they are entitled to the benefit of any fair doubt in that respect. The words do not seem to be ambiguous in this direction, but may have appeared so to others; and to give the defendants the full benefit of all possible doubt of intent arising from ambiguity they will not be punished beyond making good the injury to the party by paying over, upon ascertainment, the profits

The respondents are adjudged guilty of contempt, and let an account be taken by the master of the profits and damages of the violation of the injunction order, to be paid in some short time after the coming in of the report, with costs, and in default thereof defendants to stand committed till the same are paid.

HOYT H. WHEELER.

PHILIP MAURO, for plaintiff.
ALBERTUS H. WEST, for defendants.

[ENDORSED:] U. S. Circuit Court, South. Dist. of N. Y. American Graphophone Co. vs. Cleveland Walcutt, Edward F. Leeds. Opinion. WHEEEER, J. U. S. Circuit Court, Filed Mar. 28, 1898, John A. Shields, Clerk.